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Railway Age Gazette

FIRST HALF OF 1917—No. 15

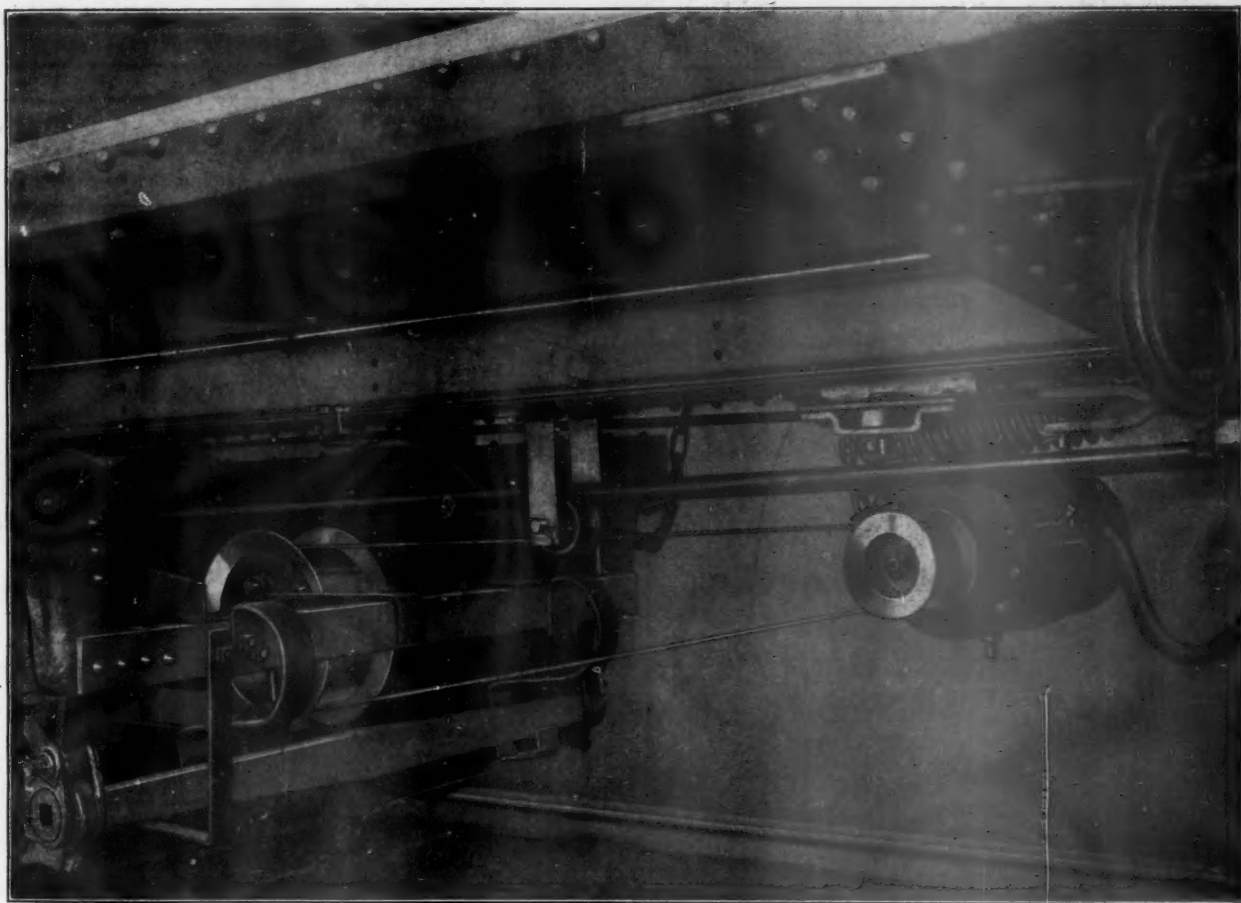
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Railway Age Gazette

Volume 62

April 13, 1917

No. 15

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A correspondent, writing to us regarding the editorial in our last week's issue, entitled, "What is Happening to Railway

Paying the Increases in Expenses

Expenses," calls attention to the fact that all increased costs now being incurred do not go into operating expenses. Part of them will go into the capital account. That is true. We did not say that every increase in expenditure means an equal increase in current operating expenses. Very much the larger part of all the increases in expenditures do enter into current operating expenses, however. This is true of practically all the increases in trainmen's wages, and of a great majority of all the increases in the wages of other employees. It is true of practically all the increased expenditure for fuel. The entire increase in taxes must be defrayed from current revenues. When rail is relaid the equivalent of that replaced is charged to operating expenses. Likewise, when new equipment is bought the equivalent of the equipment which it replaces goes into operating expenses. Finally, when the cost of new equipment and materials is charged to capital account, interest must be paid on the added investment; and the greater the cost of the equipment and materials, the greater is the amount charged to capital account and the greater is the interest which must be paid on it. Consideration was given to all the foregoing facts in making the estimate published last week as to the rate at which expenses and taxes are now increasing.

On the broader and more comprehensive questions of railway regulation most of our state legislatures take much saner

Benevolence of Our Legislators

views than they did a few years ago, which is a credit to the legislators as well as a comfort to railroad officers; but the mills tended by the public printer are not without grist, by any means; and a great variety of bills continue to be passed—let alone the bushels of them which are introduced but do not get passed. The Special Committee on Relations of Railway Operation to Legislation has prepared abstracts of new statutes which have been adopted this year in 15 states, a part of which will be found on another page. These laws

cover topics ranging from the narrowest to the broadest. A drainage requirement in Arkansas applies to only one county. In Kansas the railways must pave crossings, under a law containing such peculiar limitations that one suspects that the bill was drafted with only a single crossing in mind. On the other hand Minnesota proposes to tackle the difficult problems of the smoke nuisance and to abate it by a stroke of the pen; and Vermont abridges the liberty of countless numbers of its loyal citizens by adopting a rule that no passenger shall take a drink of liquor in public. The only thing that is certain about our legislators is their abounding benevolence. Surely they have a never-failing and affectionate interest in the welfare of everyone of us.

A study of the proceedings of the American Railway Master Mechanics' Association cannot but impress one with the

Mechanical Engineers Get Busy!

fact that the work of that association is very largely concerned with the solution of important mechanical engineering problems. There seems to be an impression abroad that railway mechanical engineers generally are not as aggressive and progressive as they should be—are not tackling their problems in the really big way in which they should. With this in mind, it is of interest to know the extent to which mechanical engineers participate in the activities of the Master Mechanics' Association; at least to what extent it is evidenced by an examination of the printed proceedings. There are 67 men on the railroads of this country and Canada who have the title of mechanical engineer or chief mechanical engineer. Of these, 41, or 61 per cent, are members of the Master Mechanics' Association. Of the 41 listed as members, 29 attended the 1917 convention, and of these 29 only 9 took any part in the discussions. Although these 41 members of the association are to a large extent young men who should be encouraged actively to engage in the work of the association, and who from the nature of their work should be an important part of its backbone, only 8 were included on the 12 important committees; for some strange reason two other mechanical en-

gineers held places on these committees, although their names do not appear on the membership list and they did not attend the convention. It must, of course, be recognized that most of the mechanical engineers did valuable work in getting together information concerning their roads for the association, or possibly assisted their chiefs in drawing up reports, and yet it would seem that the proceedings should show far greater evidence of ability and progressiveness on their part.

The figures given in the Norfolk & Western annual report showing costs of repairs of electric locomotives will no doubt

Maintenance of Electric Locomotives

attract attention. For the six months ended December 31, 1916, the cost of repairs, exclusive of renewals or depreciation, of the 12 electric locomotives amounted to \$32.69 per 100 locomotive miles. These locomotives had been in service for about a year previous to this six months' period. As the cost for repairs for all steam locomotives on the Norfolk & Western during the same period averaged \$12.70 per 100 locomotive miles, there is some danger that a lack of consideration of the various factors involved will result in a comparison unjust to the electrical system. It should be remembered that the electric locomotive pulls a 50 per cent heavier train than the largest Mallet; it performs this work on the steepest gradient of the system, and its work includes a large amount of switching. Considering these facts, a rough estimate indicates that the maintenance cost per ton-mile haul for a Mallet locomotive in the same service is about equal to an electric locomotive. The cost of maintenance of an electric locomotive in a particular service cannot be compared to the average cost of a steam locomotive in all classes of service. Electrical engineers have contended that the cost of maintenance of electric locomotives should be much lower than that of steam locomotives in the same class of service. The repair cost for these electric locomotives is undoubtedly high; it represents the great expense connected with making improvements incidental to the development of a radically new design, while still keeping the locomotives in service. In this connection, it is instructive to recall the high maintenance costs of Mallet locomotives when they were first developed, and it is reasonable to expect that marked reductions will soon be made in the electric locomotive maintenance costs. It is worthy of note here that, in spite of the faults developed, the electric locomotives have exhibited exceptional reliability in road service and have consistently performed the duties for which these locomotives were designed.

Some of the reasons which have impelled the railways to ask for advances in freight rates so soon after the most

Expenses Overtaking Earnings

prosperous year in their history are revealed in the bulletins just issued by the Interstate Commerce Commission and the Bureau of Railway Economics, showing railway revenues and expenses for the months of January and February, although the increases in the wages of train employees had not yet become effective and the higher cost of fuel was not fully operative in those months. The prosperity indicated by the returns for the fiscal year 1916 is vanishing rapidly. While railway earnings were still increasing slightly in February, except on the eastern roads, which showed a decrease, the expenses have been increasing so much faster that the railways of the United States, as a whole, showed a decrease in net operating revenues in February, as they did in December, in spite of the increase in January; and the eastern roads have been showing decreases in net since last September. For the roads as a whole, the operating expenses have been

increasing faster than earnings since last September. In that month the total operating revenues per mile showed an increase over September, 1915, of 12.6 per cent, but the expenses increased 13.8 per cent; in October earnings increased 10.8 per cent and expenses 11.7 per cent; in November earnings increased only 7.2 per cent, while expenses were 11.7 per cent greater; in December earnings increased 7.4 per cent, while expenses increased 12.8 per cent; in January earnings increased 14.7 per cent and expenses increased 16.5 per cent; and in February the commission's bulletin for 166 roads, operating 217,000 miles, shows revenues per mile of \$1,159 as compared with \$1,150 in 1916, expenses of \$910 per mile as compared with \$808, and net operating revenues of \$249 against \$342. In January, according to the bulletin of the Bureau of Railway Economics, the net operating income per mile of all the roads increased 10.6 per cent, but on the railways of the eastern district it decreased 16.6 per cent, following a decrease in December of 14.9 per cent, in November of 13.7 per cent and in October of 4.4 per cent. According to the commission's preliminary bulletin for February, the net per mile of the eastern roads averaged only \$261, as compared with \$574 in 1916. For the 166 roads covered by this bulletin, total operating revenues were \$252,488,190, as compared with \$249,610,102 in February, 1916; operating expenses were \$198,252,334, as compared with \$175,336,817, and net operating revenues were \$54,235,856, as compared with \$74,273,285 in the corresponding month of the previous year.

The condition of the motive power and freight equipment on our railways has been gradually getting worse instead of

War and the Mechanical Department

better during the past year on account of the continued heavy business and the exceptionally hard winter just passed. After a period of marked depression, the war business came so suddenly that the railways had no time in which to prepare for it. It has continued for so long that it has been impossible fully to recover from the effects of it. Now that this country has cast the die and plans active participation in the great European conflict, it needs as never before, sufficient and adequate equipment. The railways have pledged their full support to the president. This does not mean simply the use of their lines. It means in addition that the government transportation needs will be handled safely and promptly. This can not be done without equipment. All haste must be made in getting the equipment back into shape, and that which has been allowed to run beyond its time for shopping should be repaired. The hand to mouth policy that has been followed during the past year will soon lead to disaster. There is not sufficient time in which to get new power, the old power must be used and it is therefore necessary that it be made to deliver a maximum amount of work. With the power on hand it is possible to increase the hauling capacity materially by the addition of superheaters, brick arches, stokers and other devices which make possible increased hauling capacity. When applied, these devices should be maintained so that full benefits will be received from them. All this work should be done as promptly as possible. Within the next twelve months the government will have taken over more than a million men for military purposes. How many of these men will come from the railroads? The experience of Canada and England has been that a large proportion of the enlisted men are railway men. The outlook therefore for the proper maintenance of the shop forces is poor. Some drastic steps must therefore be taken to get the power back into shape and the cars repaired just as soon as possible, in order that the railways will be able to serve the government as they should.

RAILWAYS IN WAR

THE first extensive and successful use of railways in war was made by the government of the United States in the Civil War. It was assumed at the outset by military men that railways being used for military purposes should have the control and direction of their operation turned over entirely to army officers. The results in every case where this was done were disastrous. The lines and terminals rapidly became congested, the railway organization became demoralized and the roads became incapable of handling anywhere near the normal amount of traffic.

After a good deal of experience of this kind the fact dawned upon the war department that, as General McCallum said, "the management of railroads is just as much a distinct profession as that of the art of war and should be so regarded." This discovery having been made, an order was issued by the secretary of war to the following effect: "No (army) officer, whatever may be his rank, will interfere with the running of the cars as directed by the superintendent of the road. Any one who so interferes will be dismissed from the service for disobedience of orders." The "United States Military Railroad Department," which was headed and officered by experienced railway men, was given complete and exclusive jurisdiction over the operation of military railroads. It was, of course, the function of army officers to determine to what points troops and supplies would be moved; but it was recognized as the peculiar function of railway officers to determine in what manner the railways should be operated in conducting the transportation.

This recognition of the fact that an army officer was no more equipped by his special training and experience to manage a railroad than a railway officer was by his special training and equipment to direct the movements of an army, but that in using the railways in war the military must act through experienced railway officers, was the recognition of the most fundamental principle respecting the use of railways in war. Wherever since the Civil War this principle has been disregarded the effects have been the same as they were in that war; and the consequence has been that wherever railways have been used extensively in war the military authorities have been forced to the same conclusion as were the military authorities of the United States during the Civil War.

While it is fundamental that the efficient use of railways in war demands that their operation shall be directed by experienced railway men, it is, of course, even more fundamental, if possible, that the railway men operating them must be subject in a general way to the orders of the military.

A result of the recognition of these principles is seen in the arrangement which has been made between the War department and the American Railway Association, acting on behalf of the railways of the United States, for the use of the railways as an arm of the service during the war in which this country is now entering. A description of the arrangement in so far as it has been worked out is given elsewhere in this issue. As stated by President Harrison of the Southern Railway, who is general chairman of the Special Committee on National Defense of the American Railway Association, the plan of operation adopted is in distinct contrast to that employed in England. There the government at the beginning of the war assumed responsibility for the management of the railroads. It directs their operation through a committee of their own general managers and guarantees that their net earnings shall continue to be what they were before the war began. In the United States the government assumes no responsibility either for the operation of the railways or the maintenance of their net earnings. It will merely advise the railway manage-

ments of the service it wants, and in rendering the necessary service the managements will act through their regular organizations, although for military purposes the roads will be worked as a single system.

The difficulties which the managements of the railways will encounter in living up to the responsibility thus put upon them could easily be underestimated. They already are staggering under a commercial business too great for their facilities. The performance of their part in the war will add greatly to the amount of traffic which they will have to handle. There are armies to be assembled and moved, munitions factories to be enlarged, additional munitions and vast quantities of supplies to be transported, ships of war and merchant vessels to be built, and an enormous increase to be made in numerous other activities growing out of our participation in the war; and all these things will add to the traffic with which the railways will have to deal. There will be no need for such a suspension of commercial traffic as occurred in some of the countries of Europe at the outbreak of the war, but it is quite possible that in order to meet the requirements of the government it will be necessary for the railways to curtail some of their existing service. It has been necessary for the countries at war in Europe, including even England, greatly to reduce their passenger service.

While, however, the railways in performing their part will be beset by difficulties, nobody who understands the temper of the railway officers and employees of the United States or the efficiency and adaptability of the railway organizations of this country, will entertain a doubt that they will rise fully to the requirements of this national emergency.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA

THE Omaha, like the parent company—the Chicago & North Western—has changed its period for making annual reports to stockholders from the period ending June 30 to the period ending December 31. The annual report for the calendar year 1916 contains comparative figures for the calendar year 1915.

Freight revenue in 1916 amounted to \$13,837,000, an increase of \$1,960,000, or 16.50 per cent. It will be noted that this was not as large an increase as the North Western had, partly due to the fact that the Omaha got a smaller average ton-mile rate in 1916 than in 1915, the decrease being 3.57 per cent, and the average ton-mile rate in 1916 being 8.1 mills. Whereas on the North Western, however, passenger revenue just about held its own, on the Omaha it increased by 9.56 per cent, amounting to \$5,415,000 in 1916. In large part this was due to the increase in the average rate per mile. This increase was 8.21 per cent and the average passenger-mile rate in 1916 was 2.136 cents.

The Omaha did not do quite so well in holding down transportation expenses as the North Western, apparently because of increased train-mile costs. The increase in the ton mileage of freight on the Omaha was 21.49 per cent and the mileage of freight and mixed trains increased 9.46 per cent. As mentioned elsewhere in this issue, the ton mileage on the North Western increased 24.20 per cent and the mileage of freight and mixed trains, 11.72 per cent. The North Western had an increase of 14.60 per cent in transportation expenses and the Omaha had an increase of 14.04 per cent. Transportation expenses cover both freight and passengers, and the increase in mileage of passenger and mixed trains on the Omaha was only 1.86 per cent as compared with 3.04 per cent on the North Western. The North Western's average haul was slightly less in 1916 than in 1915, but the Omaha's was considerably longer. Thus, the total tonnage of freight handled by the Omaha in 1916 was 10,699,000, an increase of 16.45 per cent, whereas the North Western's increase was almost 25 per cent. There was a better increase in train-loading on the Omaha than on the North Western, the aver-

age trainload in 1916 being 414 tons on the Omaha, an increase of 11.03 per cent. Loading per loaded car averaged 21.95 tons in 1916, an increase of 5.83 per cent.

The Omaha spent \$2,360,000 for maintenance of way in 1916, an increase of \$249,000. The most important increase was in the cost of roadway and track labor, which amounted to \$882,000 in 1916, or \$111,000 more than in 1915.

In 1916, \$2,535,000 was spent for maintenance of equipment. This was an increase as compared with the previous year of \$83,000. An increase of \$145,000 in the charges for repairs, renewals and depreciation of locomotives was in part offset by a decrease of \$89,000 in like charges for freight cars. No stock or bonds were sold during the last six months of 1916. During this six months \$949,000 was spent for additions and betterments, exclusive of equipment, the two largest items being \$287,000 on the new general office building at St. Paul and \$340,000 on other buildings. The office building was ready for occupancy in February and the item "other buildings" includes expenses on the brick freight house at Sioux City, Iowa, which has just been completed and put in operation; a new passenger station of brick tile and concrete, built at Marshfield, Wis., jointly with the Chicago & North Western; a new concrete freight and pas-

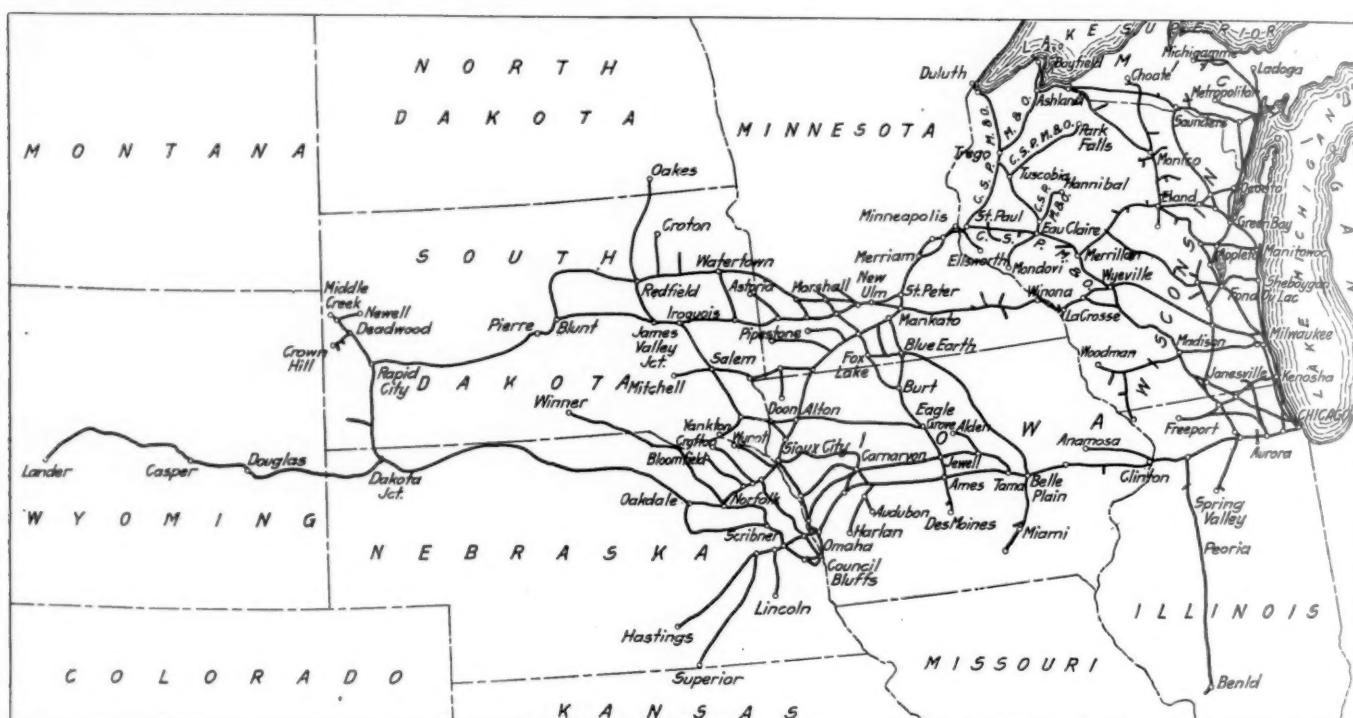
Net income	3,714,975	2,399,639
Dividends	2,087,222	2,086,910
Surplus	1,627,754	312,729

CHICAGO & NORTH WESTERN

THE Chicago & North Western carried 25 per cent more freight and a slightly greater passenger business in the calendar year 1916 than in 1915, with an increase of only 14.60 per cent in transportation expenses (the out of pocket cost of handling the business). More liberal expenditures were made on both maintenance of way and maintenance of equipment, but the operating ratio was brought down to 66.46 as compared with 68.13 in 1915.

Total operating revenues in 1916 amounted to \$97,979,000, an increase of \$14,224,000. Of this increase, \$5,736,000 was saved for operating income, and net income, after paying interest and rentals, amounted in 1916 to \$20,369,000, an increase of \$5,666,000. After paying 8 per cent on the preferred stock and 7 per cent on the common there was a surplus of \$9,270,000.

The Chicago & North Western does not get a high ton-mile or passenger mile rate as compared with many other western roads. The ton-mile rate in 1916 was only 8 mills, as com-



Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha

senger station at Mondovi, Wis., now completed; and a steel car repair shop, a wheel and machine shop, etc., built at Hudson, Wis., and a portion of the cost of the substitution of electric for steam power, which work is now under way, at the Hudson (Wis.) plant.

At the end of the calendar year the Omaha had \$2,519,000 cash on hand and no loans and bills payable.

The following table shows the principal figures for operation in the calendar years 1916 and 1915:

	1916	1915
Average mileage operated	1,753	1,753
Freight revenue	\$13,837,306	\$11,877,190
Passenger revenue	5,414,952	4,942,474
Total operating revenue	20,855,286	18,200,614
Maintenance of way and structures ..	2,360,323	2,111,099
Maintenance of equipment	2,534,794	2,451,420
Traffic expenses	356,121	349,171
Transportation expenses	7,680,387	6,735,068
General expenses	498,883	446,382
Total operating expenses	13,608,879	12,256,378
Taxes	1,053,393	994,468
Operating income	6,185,981	4,943,951
Gross income	6,664,051	5,357,109

pared with 8.3 mills in 1915, and the passenger-mile rate was 1.93 cents, as compared with 1.81 cents in 1915. The great financial success of the North Western has been due largely to economical operation, rapid growth and great prosperity of the territory served, unusually favorable traffic relations both at Chicago and on the western end, and low fixed charges. The territory served by the road is at present, of course, receiving the benefits of the abnormally high prices for agricultural products which prevail, and both the organization and the physical plant of the North Western have proved capable of handling the large increase in business without the abnormally high costs incident to overloading either an organization or a railroad property.

The Chicago & North Western has changed its period for reporting to stockholders from the fiscal year ending June 30 to December 31. The report made to stockholders for the calendar year 1916 includes figures for purposes of comparison for the calendar year 1915. The total tonnage of freight

carried in 1916 was 56,408,000, comparing with 45,145,000 tons carried in 1915. The average haul was 144 miles in 1916 and 145 miles in 1915, making the ton mileage 8,131,000,000 in 1916 as compared with 6,546,500,000 in 1915, an increase of 24 per cent. The average trainload in 1916 was 510 tons, comparing with 467 tons in 1915, an increase of 9.24 per cent. Car loading per loaded car averaged 22.66 tons in 1916 and 21.47 tons in 1915. No new equipment was bought during the last half of 1916, but the North Western being rich and forehanded had during the year preceding June 30, 1916, bought 35 locomotives and 2,800 freight cars.

The road was in general in good shape to handle a big business. In the fiscal year ended June 30, 1916, \$5,753,000 was spent for additions and betterments to the property, exclusive of equipment, and this included \$1,206,000 for betterment of roadway and track, \$643,000 for buildings and fixtures and \$618,000 for bridges, trestles and culverts. In the last six months of 1916 \$3,925,000 was spent for additions and betterments, which included \$637,000 for betterment of roadway and track, \$472,000 for buildings and fixtures, and \$401,000 for bridges, trestles and culverts. The largest piece of construction work which the North Western has been engaged on during the past year and a half has been the Calumet terminal elevator at Chicago. There was \$806,000 spent on this in the fiscal year ended June 30, 1916, and an additional \$1,356,000 in the last six months of the calendar year.

The unit figures for maintenance, especially maintenance of equipment, look small, but it is a fact that maintenance work, especially maintenance of equipment work, is remarkably well and remarkably economically done on the North Western. The following table shows the maintenance expenditures on a unit basis for the calendar year ended December 31, 1916, and the calendar year ended December 31, 1915, the figures for equipment, however, being based on the number of cars and locomotives in service at the end of December, 1916, and June, 1916:

	1916	1915
Maintenance of way per mile.....	1,459	1,261
Repairs per locomotive	2,748	2,281
Repairs per passenger car.....	594	501
Repairs per freight car.....	78	66

During the year and a half since June 30, 1915, the Chicago & North Western has paid off maturing funded debt and equipment trust certificates to a total amount of \$9,389,000. During this period there was \$7,972,000 general mortgage 5 per cent bonds sold. At the end of the calendar year 1916 the North Western had \$10,288,000 cash, no loans and bills payable, and \$3,471,000 matured interest and dividends unpaid.

The following table shows the principal figures for operation in the calendar year ended December 31, 1916, compared with the calendar year ended December 31, 1915, and the figures for the six months ended December 31, 1916, compared with the six months ended December 31, 1915:

	Calendar year 1916	Calendar year 1915	Six months ended Dec. 31, 1916	Six months ended Dec. 31, 1915
Mileage operated	8,108	8,108	8,108	8,108
Freight revenue	\$65,380,165	\$54,514,229	\$35,352,778	\$30,326,012
Passenger revenue	22,329,509	20,536,399	12,242,805	11,358,300
Total operating revenue.....	97,978,844	83,754,447	53,138,775	46,473,797
Maint. of way and struct.	11,831,004	10,217,219	.....	.....
Maintenance of equipment.	15,087,346	13,235,262	.....	.....
Traffic expenses	1,340,016	1,304,890	.....	.....
Transportation expenses.....	34,433,717	30,046,007	.....	.....
General expenses	1,982,629	1,816,235	.....	.....
Total operating expenses.....	65,120,827	57,062,575	33,921,269	30,752,771
Taxes	5,016,527	4,576,943	2,585,000	2,310,000
Operating income	27,835,731	22,099,767	16,629,523	13,400,499
Gross income	30,794,904	25,081,321	18,070,025	14,795,679
Net income	20,368,924	14,702,578	12,712,151	9,625,737

Sinking funds	199,575	208,486	105,670	122,665
Dividends	10,899,615	10,899,615	5,449,808	5,449,808
Surplus	9,269,735	3,594,477	7,156,674	4,053,264

NORFOLK & WESTERN

THE Norfolk & Western, like a great many other roads, has changed the period for annual reports to its stockholders from the fiscal year ended June 30 to the calendar year ended December 31. This change is made so that the period for stockholders' reports will coincide with the period for reporting to the Interstate Commerce Commission. The management has made a report for the six months ended December 31, 1916, and includes in that report figures for the full calendar year ended December 31, 1916. The figures for the calendar year 1915, however, have not been included. It is so much a part of the comments on railroad annual reports in these columns to compare the year under review with the previous year that at first a report without the figures necessary for such a comparison appears impossible of adequate analysis. As a matter of fact, however, it is interesting to study the Norfolk & Western report, making a mental comparison, not with the road's own showing in previous years, but rather with what is known of varying conditions of railroad operation.

The Norfolk & Western in the six months ended December 31, 1916, kept up the remarkably good showing which it made in the previous fiscal year. Total operating revenues for the six months amounted to \$30,308,000; operating expenses consumed only 57 per cent of gross and after paying interest charges and two per cent (at the annual rate of four per cent) on the outstanding \$22,991,800 adjustment preferred stock, the company had \$10,337,000 available for dividends on the approximately \$119,000,000 outstanding common stock. Three and a half per cent was paid for the half year, calling for \$4,166,000, or considerably less than half of the amount available.

The Norfolk & Western operates 2,085 miles of railroad and of this 548 miles is double track. There is approximately a mile and a third of sidings and yard tracks to each two miles of railroad. About 1,543 miles are main line and of this main line 473 miles is laid with 100-lb. rail and 875 miles with 85-lb. rail. Of the 528 miles of branch lines, 131 miles is laid with 100-lb. rail and 210 miles with 85-lb. rail.

There are now on the road 953 locomotives, of which 111 are passenger locomotives, 652 are steam freight locomotives, 12 are electric freight locomotives and 178 are switching locomotives. Rolling stock owned and leased consists of 471 passenger cars, 47,832 freight cars and 1,135 work cars. Of the freight cars 11,986 are all-steel 115,000-lb. capacity hopper cars, 9,808 are steel underframe 100,000-lb. capacity hoppers, 2,899 are all-steel 115,000-lb. capacity drop bottom gondola cars and 4,170 are 100,000-lb. steel underframe drop bottom gondolas. There are 7,993 box cars of which 3,556 are steel underframe, 80,000-lb. capacity and the remainder wooden cars of 60,000-lb. to 80,000-lb. capacity.

The road is divided into five operating divisions, the Norfolk with 375 miles of main line, the Shenandoah with 356 miles, the Radford with 260 miles, the Pocahontas with 209 miles and the Scioto with 343 miles.

Of the total tonnage of freight carried in the six months ended December 31, 1916, 74.48 per cent was products of mines. Included under this heading is the tonnage of bituminous coal which amounted to 65.98 per cent of the total tonnage of all commodities, and coke which amounted to 3.97 per cent of the tonnage of all commodities. The tonnage of manufactures was 11.94 per cent of the total tonnage carried and l.c.l. freight was only 0.25 per cent of the total. Lumber and forest products furnished 4.98 per

cent of the total tonnage, agricultural products 3.31 per cent and live stock and animal products only 0.60 per cent.

The ton-mile rate averages, as would be expected, very low, being 4.22 mills in the last half of 1916. The greater part of the tonnage of coal carried is billed from local points to foreign points and on this business, including all the commodities billed from local points to foreign points, the average ton-mile rate is 3.51 per cent. The Norfolk & Western, however, gets a long haul on this business, an average of 306 miles. The freight density is very high. The tons one mile per mile of road in the full calendar year 1916 amounted to 5,823,000. The revenue trainload is very high; it was brought up to an average of 1,018 tons in the last six months of 1916. Car loading is high, the average per loaded car being 35 tons.

The Norfolk & Western allocates its operating expenses as between freight and passenger service. The division for maintenance of way and structures is on an arbitrary basis, but the maintenance of equipment and for transportation the greater part of the expenses can be accurately divided and it is in transportation expenses per train-mile that the Norfolk & Western makes a truly remarkable showing when

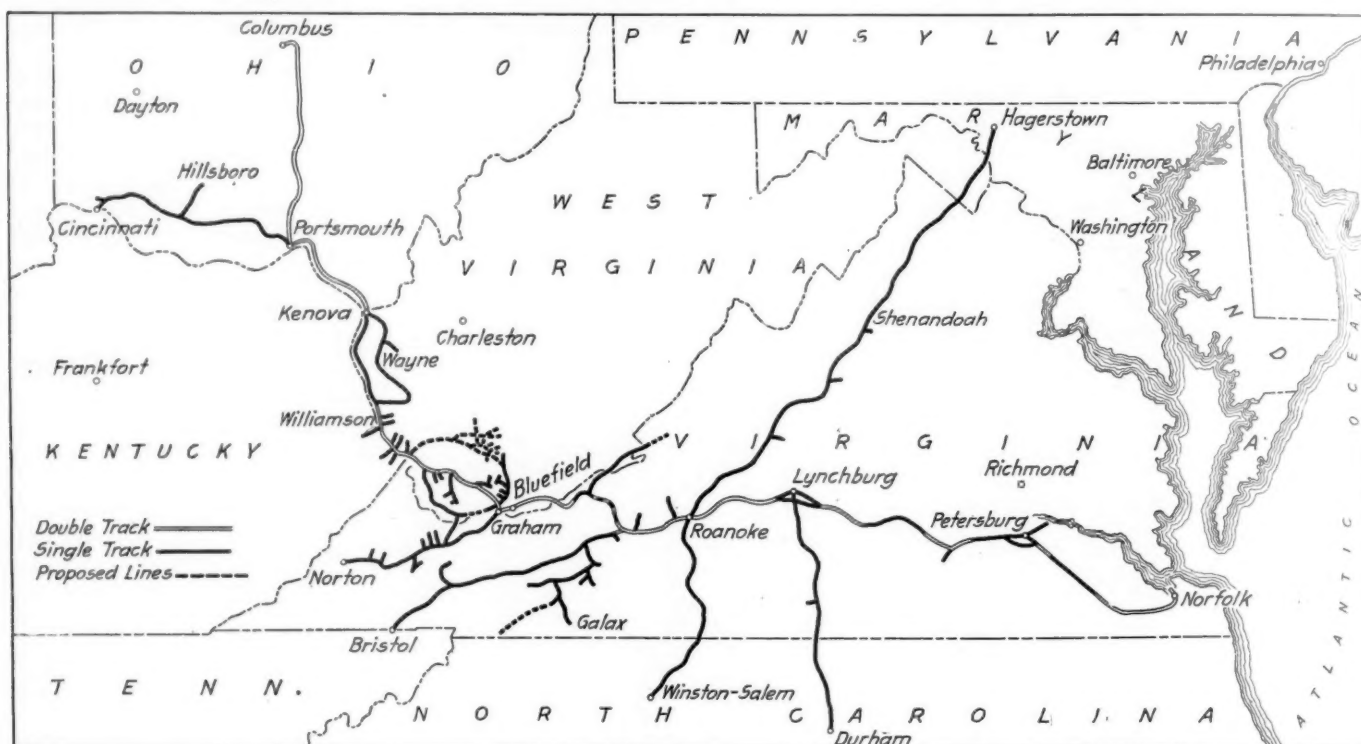
NEW BOOKS

Rate Extension Tables. By E. J. O'Dea, 200 pages, 8½ in. by 11 in. Bound in cloth. Published by the Sherdea Publishing Company, Rutherford, N. J. Price, \$5.00.

This book contains rate extension tables for the quick determination of freight charges, percentages, divisions, wages, etc. The tables are meant primarily for use in freight houses where circumstances do not demand or permit the use of calculating machines. The author makes free to declare, however, that inasmuch as the book eliminates the chance of error in placing the figures on the calculating machine it may be found of greater use than the latter. The figures in the book are divided into 99 sections, section 34, for example, giving tables for all rates and decimals per 100 lb. (or ton) from 34 lb. at one per cent per 100 lb. to 34.9 lb. at 99 cents. A thumb index adds to the book's usefulness.

Poor's Manual of Railroads, 1917. Published by Poor's Railroad Manual Company, 80 Lafayette St., New York. 2,082 pages.

This, the fiftieth annual number of Poor's, is the first manual to be published containing railroad statistics for the fiscal year ended June 30, 1916. Time was when the only au-



The Norfolk & Western

it is remembered that the freight trainload now averages over 1,000 tons.

The transportation expenses the last half of 1916 were \$1.06 per train-mile in freight service and a little over 47 cents per train-mile in passenger service. Since transportation expenses include yard expenses, train despatching and superintendence, engine house expenses, etc., the actual cost of fuel, wages and lubricants of moving a freight train is well under \$1 a mile. Of course, the very low price of fuel per ton for the Norfolk & Western helps its showing greatly, but on the other hand the Norfolk & Western has not particularly low grades for a soft coal line.

The Norfolk & Western's policy toward maintenance is indicated in the following table which gives figures for the full calendar year 1916:

Maintenance of way per mile of road.....	\$3,247
Repairs, retirements and depreciation per steam locomotive.....	4,147
Repairs, retirements and depreciation per passenger train car.....	985
Repairs, retirements and depreciation per freight train car.....	104

thentic, accurate source of information about the great majority of American railroads was to be found only in Poor's or in the companies' own annual reports to stockholders. The Interstate Commerce Commission now publishes very full statistics, but it is so long after the close of the fiscal year that even for earnings and expenses and like information, Poor's is a necessity for a statistical library and Poor's, of course, contains the facts relating to bond issues and mortgages which are not given in the Interstate Commerce Commission's publications. As was done last year, the "margin of safety" over interest and dividend requirements of individual bonds and stocks is shown. The working out of this figure for "margin of safety" in cases where there are underlying divisional mortgage bonds of leased lines, etc., involves a complicated calculation. The method of making this calculation which Poor's uses, is explained in the preface which ought to be read by anyone who is to make use of the "margin of safety" figures.

Letters to the Editor

AS SEEN FROM A DISTANCE

14 rue Picot, PARIS, France.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

What is the point in flagging on a road with the block system? If there is any point, why not be consistent and when a crossover movement is to be made, send out a flag on all tracks affected; or when a drawbridge is open why not send a flag back to the yellow signal; or when a train is going slowly, as with a succession of yellow signals, why not have a flag out? A collision between trains moving at different speeds can well be serious.

To the advocates of flagging: what about the six or seven minutes it takes a flagman to get back the proper distance? What about the numerous instances when the flag only goes back a few yards? It will be argued that there is the chance of the false clear indication. If these cases really occur frequently enough to be worth consideration, why not do the flagging business properly and have a flagman stationed in a small cabin every half mile, with telephone connections? Flagging is not done in Europe except in special cases, and they do not have more collisions than we do.

W. G. LANDON.

SAVINGS BY EFFICIENT CAR LOADING AND MOVEMENT

SAN FRANCISCO, Cal.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In connection with the article in your issue of January 26 on Increased Car Efficiency your readers may be interested in what the Western Pacific is doing to relieve the situation. This road's performance for five months, July to November, 1916, inclusive, shown below, was due to team work among its officers and employees and the cheerful co-operation of the shipping public.

The average mileage per car per day, of all classes of freight equipment for July, 1916, was 70 miles; August, 80 miles; September, 72 miles; October, 74 miles; November, 79 miles; and average for five months, 75 miles a day. The average number of tons per train mile in July was 635.51; August, 559.75; September, 589.92; October, 621.33; November, 708.57; and the average for five months, 623.01 tons. Average tons per loaded car mile figured out as follows: July, 24.83; August, 23.09; September, 23.08; October, 25.59; November, 27.44; and for five months, 24.80 tons.

Comparing the average tons per loaded car for October and November, 1916, with the same months in 1915, we find the following good results: October, increase in 1916 over 1915, eastbound, 4.63 tons per car, or 22.3 per cent; westbound, 4.48 tons per car, or 21 per cent. In November, the increase eastbound was 4.46 tons per car, and westbound, 4.67 tons.

The October figures represent a saving of 906 cars eastbound and 1,021 cars westbound.

In California we have the advantage on intrastate freight of the three dollar demurrage rate; but even with the high rate the time consumed in unloading counts up to a large figure. The reports of the Pacific Car Demurrage Bureau, for October, 1916, show that 182,858 cars were reported to it for the State of California alone, of which 2.04 per cent, or 3,730 cars, were held by the consignee beyond the free time allowance, and the demurrage charges amounted to \$35,858. The holding of these cars for the time beyond the allowance represents a loss of 11,989.3 car days, or the loss to the public and the railroads of 3,730 cars for 3.21 days. Had the Western Pacific had the use of the 3,730 cars for the 3.21

days so held, it could have moved 93,555 tons of freight 227 miles. By a very little figuring a shipper can get an idea of what effect this would have had on his business.

K. M. NICOLAS,
Superintendent of Transportation.

THE USE OF STEEL FREIGHT CONTAINERS

NEW YORK.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Your interesting editorial in the issue of March 23 on "Better Freight Containers" is a timely one in view of the tremendous freight congestion at the present time, and the probability of still greater congestion in the future. You attribute to light containers a loss that, if expressed in dollars and cents, would be colossal.

Light top loading, only loading cars to 55 per cent of their capacity, the "loss and damage" account, are in themselves worthy of deep study. The ramifications of the losses as pointed out in your statement, when an increased load of 5 per cent would release 125,000 cars, are illuminating. The reduction in locomotives, in crews to handle these trains and the wear and tear on the rolling stock and tracks, come under this head. The writer has frequently wondered why the railroads were so backward in encouraging steel containers. These practically eliminate pilfering, for the seal or padlock is in view and is placed on each package as easily as on a box car door; they have handles for convenience in handling, they can be nested to be returned, and when so treated run into a tonnage without bulk that in amount is far from negligible, but still the railroads do not offer a return freight rate on empty containers in any sense commensurate with the economies they produce.

In the past, before these collapsible metal containers had been perfected, the number of parts and their liability to loss militated against their use, but now, with the improved containers on the market, these objections seem to have been overcome.

The use of steel as against wood, even under the present freight conditions, for those making daily shipments in containers, is so obvious that steel is rapidly coming into its own. For these the railroad should adopt some plan so as to only charge as much freight for steel as would be made for a standardized wooden box; this would undoubtedly still further encourage its growth. It would seem simple for the railroads to demand that the shipper use a certain standard thickness and weight of wood to contain a certain bulk and weight of content, and make no greater charge for a steel container to do the same service. This would give the railroads the same freight as they at present enjoy, with the advantage of eliminating the light top load, increasing the average loading of a car, and added thereto, giving them a tonnage on the returned collapsible containers.

In certain industries now, as for example the silk trade, it has been found to be an economy to purchase an expensive container in the form of a trunk in which silk racks may be placed, rather than to trust to the wooden packing case. If this is so in this trade, is it not a matter of education for the railroads to bring their other shippers to the point of view that an indestructible steel container pays?

A loss, even if eventually paid for by the railroad, is an economic loss in time and money to the shipper and is an unnecessary financial drain on the railroads which is inexcusable where the remedy lies at hand.

T. C. CLARK.

STEEL FIREBOXES FOR INDIA.—Owing to the difficulty of obtaining copper plates in England for requirements unconnected with the war, railway administrations in India have been asked to consider the substitution of steel for copper fireboxes in preference to repairing the latter. New steel fireboxes can be made in England for existing engines, but must be especially designed for each engine.

The Grade Separation Problem at Syracuse

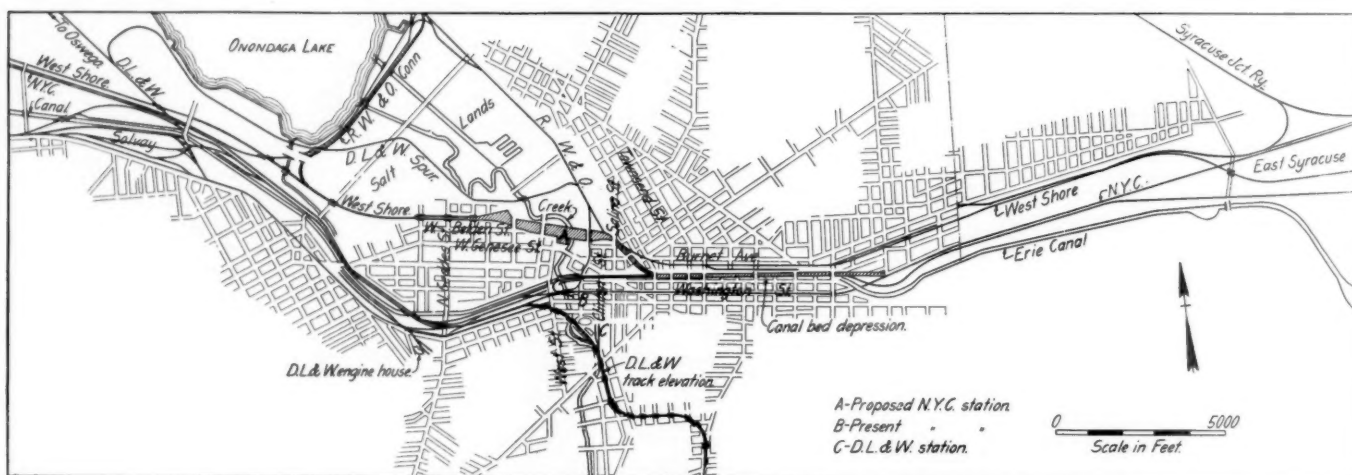
Arnold Report Advocates Track Elevation for the Lackawanna and Depression of the New York Central

A REPORT on the grade separation problem of Syracuse, N. Y., was recently presented to the grade crossing commission of that city by Bion J. Arnold, consulting engineer, of Chicago, after an extended investigation of the situation and an examination of some 20 schemes proposed at various times since the beginning of the grade separation agitation in that city. Chief among the plans proposed is one for the use of the bed of the old Erie canal as a depressed location for the tracks of the New York Central and this plan is recommended in the report as the most feasible solution of the problem insofar as it concerns that road. Track depression has also been proposed by some for the Delaware, Lackawanna & Western, but the report finds that this plan is impracticable and recommends the elevation of its tracks.

An interesting feature of the report is the objection made repeatedly in track elevation in general and particularly to the use of embankments either with natural slopes or retaining walls. A continuous concrete viaduct over the railway's private right of way, as well as over the streets, is advocated as preferable to the "Chinese wall" resulting from the interposition of an embankment. A still more unusual view is

Electrification is also opposed as being "decidedly unfeasible at present, but no project of railroad rearrangement in Syracuse should be permitted from now on without contemplating future main line electrification including the Syracuse section." The Syracuse city plan receives considerable attention in the report, particularly with respect to the present restriction of the growth of the business center through occupancy of the surrounding property by railways and industries. A material reduction in the railway use of property in the immediate vicinity of the business center is advocated, particularly for classification, coach and storage yards, engine terminals, etc.

Freight traffic through the city is considered as particularly objectionable and various schemes are advocated for the eventual elimination of all freight train movements through the city except such as are required for local service. An entirely different attitude is taken toward the electric suburban lines radiating in various directions from Syracuse and which now occupy the city streets in reaching the business center. With reference to the suggested grade separation for these lines it is stated that "the financial limitations of these same roads render it rather unfeasible for them to



Map of Syracuse Showing the Recommended Schemes

that taken regarding the relative elevations of the tracks and streets. It is recommended that the elevation of the tracks be kept at a minimum through the depression of the streets and a reduction in the vertical clearances, since "this has the advantage of a far less conspicuous structure." It is said in further justification of this that the decreased elevation gives greater convenience in providing spur tracks for the second story industrial development.

The report takes a conservative attitude concerning local agitation for a Union station, as indicated by the statement that "A Union passenger station would be desirable if it could be worked out under conditions equitable to the participating roads and to the city, but the mistake should not be made either of subordinating other more essential features of practicability and use to the idea in the abstract or of over-developing beyond the obvious needs of the city." The report also deprecates any tendency toward an over-development of passenger terminal facilities. After an extended discussion of the passenger traffic it states that "It would, therefore, appear unwise for the city to permit

* * * extensive taking of land for this purpose."

provide now exclusive depressed entrances, unless they can be provided in connection with other improvements." The report says further that "the electric express business in Syracuse is now well organized on some lines and should be encouraged to the greatest possible extent, both as to public convenience and as a legitimate source of railway income."

The report definitely opposes the attitude of certain interests in the city which advocate the permanent retention of the old Erie and Oswego canals. Statistics are given to show that these canals have outlived their usefulness and that the space they occupy can be utilized in other ways for much better purposes.

THE RAILROAD LAYOUT

The railroads' occupancy of the city of Syracuse has roughly the shape of a cross. The New York Central and the West Shore enter from the east through a valley on opposite sides of the Erie canal and leave for the west along the south shore of Onondaga lake and the salt lands at its south end. The Oswego branch of the Delaware, Lacka-

wanna & Western enters from the south through a draw between the hills, and after reaching the center of the city turns west parallel to the New York Central. The Rome, Watertown and Ogdensburg, a subsidiary of the New York Central, enters from the north along the east shore of the lake with terminals just north of the business center. The industrial development of the city has naturally been greatest along the railways, and in consequence the main retail district of the city, located just east of the center of the cross formed by the railroads, is restricted in development by the occupancy of much of the adjacent property by railroads and manufacturing plants.

Recent railroad development in the vicinity has consisted of a belt line north of the city known as the Syracuse Junction Railway, owned by the New York Central, over which all through freight is detoured between East Syracuse, four miles east and the Solvay Process plant two miles west. The Lackawanna also has a spur about three miles long in the salt lands at the south end of the lake.

The New York Central has a two-track main line at grade in the center of Washington street as far west as Franklin street, where the passenger station for all of the New York Central lines is located. West of this point there are extensive terminals including an in- and an out-freight house at West street, classification, coach and storage yards and an engine terminal. The West Shore enters from the east in a location parallel with the New York Central as far as Townsend street, where the line takes an offset of about four blocks to the north and then continues west parallel to Belden street. The West Shore has yards along Burnet avenue from the eastern city limits as far west as Townsend street, where the local freight house is located.

The New York Central tracks in the city are used for

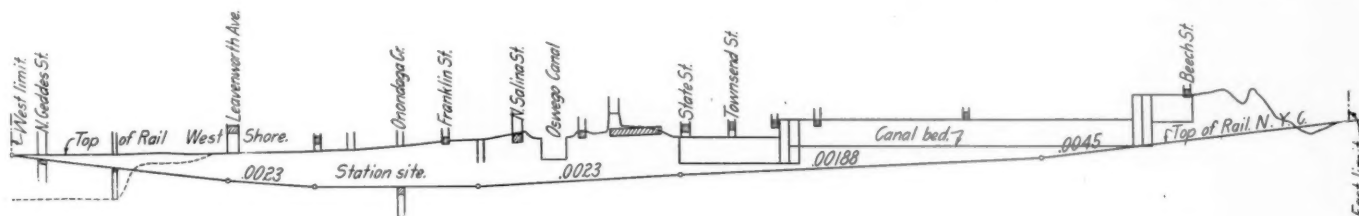
the Lackawanna, 9 on the West Shore and 6 on the New York Central which pass through the city, while the latter road operates an average of about 75 trains over the Syracuse Junction detour.

THE GRADE CROSSING PROBLEM

The grade crossing commission of Syracuse is vested with authority for the elimination of 56 grade crossings, including 7 on the New York Central outside of the city limits. Of the 49 within the city, 17 are on the New York Central, 18 are on the Lackawanna, 10 on the West Shore and 4 on the Rome, Watertown & Ogdensburg. Seventeen others are mentioned in the Arnold report as requiring attention.

The subject has been under consideration for a number of years and many plans have been proposed. The most prominent of these are the plans for the utilization of the canal bed. As there has been some popular objection, sentimental or otherwise, to the obliteration of the old canal, an alternative plan proposing the depression of the West Shore property has been suggested for the use of the New York Central lines. The railroad has also proposed the elevation of the West Shore lines but objections are raised to this because of badly skewed crossings of considerable length over important streets in the business center.

Several plans were also proposed for abandoning the present New York Central and West Shore locations in favor of detour lines to the north of the present lines, but these proved impracticable. One of these involved the use of the present belt line with a new line skirting the edge of the salt lands, but this was abandoned on account of the cost of a station on the soft foundations which would be encountered and because of the remote location from the business center.



Profile of Proposed New York Central Depression

passenger trains and a limited number of freight train movements for local time freight. While the West Shore still operates some freight trains on its line east of the city, it has leased its line to the Oneida (electric) Railway as far east as Utica and Little Falls for passenger and freight service. Its terminal property is used for local freight only. The Rome, Watertown & Ogdensburg had a freight station at Clinton and Belden streets and uses a track in Franklin street to reach the New York Central passenger station.

The Delaware, Lackawanna & Western enters from the south with a single track line, descending on a one per cent grade with a rather crooked alinement. The passenger station, team tracks and inbound freight house are located at Armory Circle. The outbound freight house and a freight yard are located parallel to the New York Central west of West street. A small engine terminal is situated on a short spur track west of Geddes street.

Owing to the fact that the New York Central detours its heavy freight traffic, passenger trains form the majority of the total train movements through the city, an average of 129 passenger trains and 29 freight trains passing through Syracuse daily. Of the passenger trains, 118 are New York Central through and local trains and 11 are Lackawanna trains. The Lackawanna has the larger portion of the freight movement through the city because none of its trains are detoured. There are an average of 14 freight trains on

Several schemes for tunnel lines on locations a short distance to the north were also discarded as impracticable without electric operation.

Both elevation and depression have been proposed for the Lackawanna, but the Arnold report shows that the latter is entirely impracticable. A two per cent approach grade would be required descending from the south and complications would be encountered at the crossing of Onondaga creek, which has a flow line so high relative to the railroad that the depression of the latter would involve the construction of an inverted syphon.

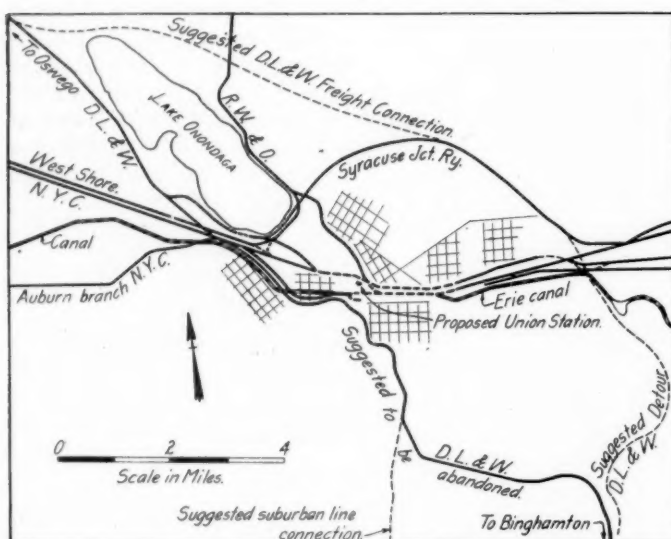
Another plan proposed for the Lackawanna involves the abandoning by the railroad of all of its lines south of the present station and the substitution of a connection with the New York Central at Syracuse Junction from a point five miles south of the city. This plan implies a traffic arrangement between the Lackawanna and the New York Central, whereby the former would use the tracks of the latter to a proposed union station while all the freight traffic would pass over the Syracuse Junction line to a connection with the Lackawanna's tracks northwest of Syracuse. Under this arrangement all freight traffic of the Lackawanna in the city would have to be handled from the west. This plan would involve an expenditure of from \$1,300,000 to \$1,600,000 in addition to the expense of a traffic arrangement with the New York Central. No im-

provement in grades would be gained and there would be an increase in distance of 3.8 miles for through freight and 10.5 miles for local freight between the city and points south. This plan is abandoned in the report because of financial obstacles but in a discussion of future possibilities of the traffic on this line in connection with a growth of lake traffic, it is said that "it will only be a question of time or growth when the city will be forced to prohibit by some means this overhead bulk movement. In the event of such growth it will then occur that both through and detour investments will possibly have to be maintained." Incidentally, it is suggested that the use of the abandoned portion of the Lackawanna track by a suburban line would be desirable.

THE RECOMMENDED PLANS

The plans recommended imply an entirely independent treatment of the New York Central and Lackawanna properties. In the case of the latter the track elevation plan is submitted and in the case of the former a track depression plan is proposed. The latter would make use of the Erie canal bed as far west as State street where an offset to the north would be made to the existing West Shore property west of North Salina street.

Under this plan the New York Central would abandon its tracks in Washington street and the West Shore its



Suggested Detour for the Lackawanna

tracks between Townsend and North Salina streets. In consequence the New York Central facilities west of West Street and the West Shore property east of Townsend street would be operated as stub-terminals for local service only. As this plan also isolates the existing passenger station of the New York Central lines, a new station is proposed facing Genesee street near West street. Access to this station by the Rome, Watertown & Ogdensburg is proposed by means of a new connection with the New York Central some distance west of the station by a line along the south shore of Lake Onondaga. Under this plan separation of grades would be secured by carrying streets over the tracks on viaducts, except two at the extreme west end of the layout where the topography is such as to permit under crossings. Open cuts with retaining walls on each side would be used for most of the distance except for a subway about 500 ft. long through the business center of the city.

The normal prism of the Erie canal is 72 ft. wide by 9 to 10 ft. deep. This width is decreased in the vicinity of Salina street to 60 ft. The width of the canal including the two tow paths is normally 119 ft. with the minimum 79 ft. and the maximum 150 ft. The plan submitted not only

implies the lowering of the canal bed a sufficient amount to afford a 17 ft. vertical clearance for the railroad, but an additional amount sufficient to permit an appreciable lowering of the present street crossings over the canal which are now raised appreciably above the general street level.

The successful conclusion of this scheme is also contingent upon an agreement between the railway and the city as to the type of bridge used for the street crossings. The maximum development of the available canal property with tracks implies the use of clear-span bridges with floor thicknesses made a minimum by the use of through trusses on the center line of the streets and the curb lines. If, however, the city should insist on deck bridges, it would be necessary to introduce intermediate supports for the superstructure between tracks and thus necessitate a 17-ft. spacing for some of the tracks instead of a 13-ft. spacing. The plan also involves the purchase of valuable property between State street and Salina street where the line makes a swing from the canal location to the present property of the West Shore. The valuation of the canal land introduces another serious problem. For the station the plan proposes 15 station tracks and one additional through track with five approach tracks on the east and seven on the west.

The estimated cost of this plan is about \$5,200,000 for excavation, bridges, tracks, station and the connection for the Rome, Watertown & Ogdensburg. Property damage and right of way, including canal lands, is estimated to bring the total up to about \$6,000,000. A suggested supplement to this plan is the utilization of the present New York Central passenger station as a terminal for the interurban lines. In this connection one scheme proposes the use of a portion of the canal subway for one or two interurban tracks in addition to the New York Central tracks. However, it is argued that the traffic of the suburban lines is not sufficient to justify the use of the entire passenger station and that a portion of it should be used for a market or some other public purpose.

The proposed elevation of the Delaware, Lackawanna & Western tracks covers a distance of about two miles in which there are at present 16 street grade crossings. The plan implies no change in the alignment nor in the existing passenger and freight terminals. The details of this plan, which were submitted by G. J. Ray, chief engineer of the Lackawanna, provide for the serving of some industries by tracks on the surface with connections by inclines and in other cases by elevated tracks. The elevation is shown as carried on embankments supported where required by retaining walls. The tracks would be carried across the streets on plate girder bridges of from one to three spans. Vertical clearances over the streets are given as 13 and 14 ft. and 15 ft. in a few cases. The difference in elevation between the streets and railway grade averages about 17.5 ft. The cost of this work is estimated at about \$1,500,000. While approving the general plan the report makes a number of objections to certain details. As mentioned previously, a continuous reinforced concrete viaduct is advocated with the elevation of the tracks limited as much as it is found feasible to reduce the vertical clearance and to depress the streets. A number of improvements of the railway terminal facilities are also proposed.

RAILWAYS OF GERMAN EAST AFRICA.—The most important railway in German East Africa is the Central Railway, of meter gage, running from the seaport of Dar-es-Salaam to Kigoma, on Lake Tanganyika, via Tabora, a distance of 982 miles. Another important railway is that running from the seaport of Tanga to Moschi in the Kilimanjaro district, a distance of 219 miles. Freight rates are slightly lower than on the British East African system. The railways of German East Africa are not at present available to commerce.—*Commerce Report.*

Railways at the Service of the Government

Will Be Operated as a Unit Under the Direction
of a Central Board of Five Railway Executives

PLANs for the co-ordination of activities of the railways of the United States so that they will be operated practically as a single system in meeting the transportation needs of the country were adopted at a meeting of more than 50 railway executives held at Washington on Wednesday at the call of Daniel Willard, president of the Baltimore & Ohio, and chairman of the Advisory Commission Council of National Defense. General authority to formulate the policy of operation was placed in the hands of a special committee on National Defense of the American Railway Association, of which Fairfax Harrison, president of the Southern Railway, is chairman. This committee, which originally con-

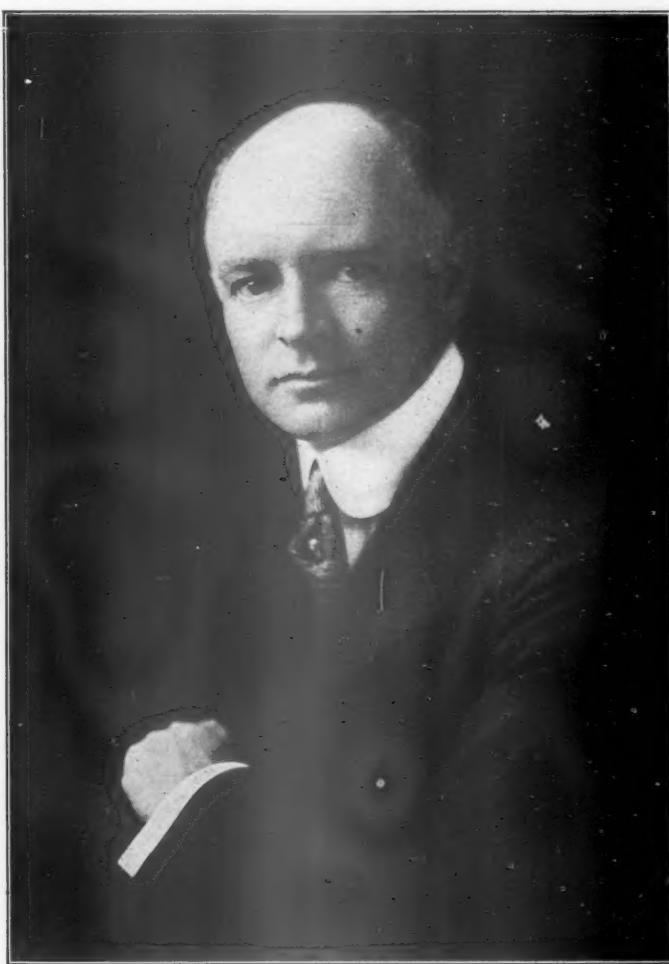
ing the roads, the problems they will be called upon to face in meeting the need for transportation during the war and the necessity for securing the utmost efficiency of organization.

After a general discussion, a committee on resolutions, composed of Howard Elliott; B. F. Bush, receiver, Missouri Pacific; Jacob M. Dickinson, receiver, Chicago, Rock Island & Pacific; Fairfax Harrison and R. S. Lovett, chairman executive committee, Union Pacific, was appointed and a committee on plan of action, composed of Julius Kruttschnitt; A. H. Smith, president, New York Central; L. F. Loree, president, Delaware & Hudson; Samuel Rea and George T. Slade, vice-president, Northern Pacific.



Daniel Willard

Member of the Council of National Defense



Fairfax Harrison

President, Southern Railway

sisted of 18 railway executives, divided into four districts, will be enlarged to 28, divided into six departments, each to correspond with one of the military departments of the army, and its work will be supervised by a central executive committee to sit at Washington, comprised of Mr. Harrison; Samuel Rea, president, Pennsylvania Railroad; Howard Elliott, chairman, New York, New Haven & Hartford; Julius Kruttschnitt, chairman executive committee, Southern Pacific; and Hale Holden, president, Chicago, Burlington & Quincy, with Mr. Willard as a member ex officio.

Mr. Holden was elected chairman of the meeting and Daniel Willard made an address outlining the situation confront-

After lunch the Committee on Resolutions offered the following, which was adopted:

"Resolved, that the railroads of the United States, acting through their chief executive officers here and now assembled, and stirred by a high sense of their opportunity to be of the greatest service to their country, in the present national crisis, do hereby pledge themselves, with the Government of the United States, with the governments of the several states, and with one another, that during the present war, they will co-ordinate their operations in a continental railway system, merging during such period all their merely individual and competitive activities in the effort to produce a maximum of

national transportation efficiency. To this end they hereby agree to create an organization which shall have general authority to formulate in detail and from time to time a policy of operation of all or any of the railways, which policy, when and as announced by such temporary organization, shall be accepted and earnestly made effective by the several managements of the individual railroad companies here represented."

The Committee on Plans in its report recommended reference of the whole matter to the special committee of the American Railway Association and Mr. Harrison announced the plan of organization which is given in detail below. The general spirit of the meeting was one of enthusiastic co-operation and definite desire to render every aid possible to the Government. The meeting was addressed by Secretary Franklin K. Lane, of the Council of National Defense.



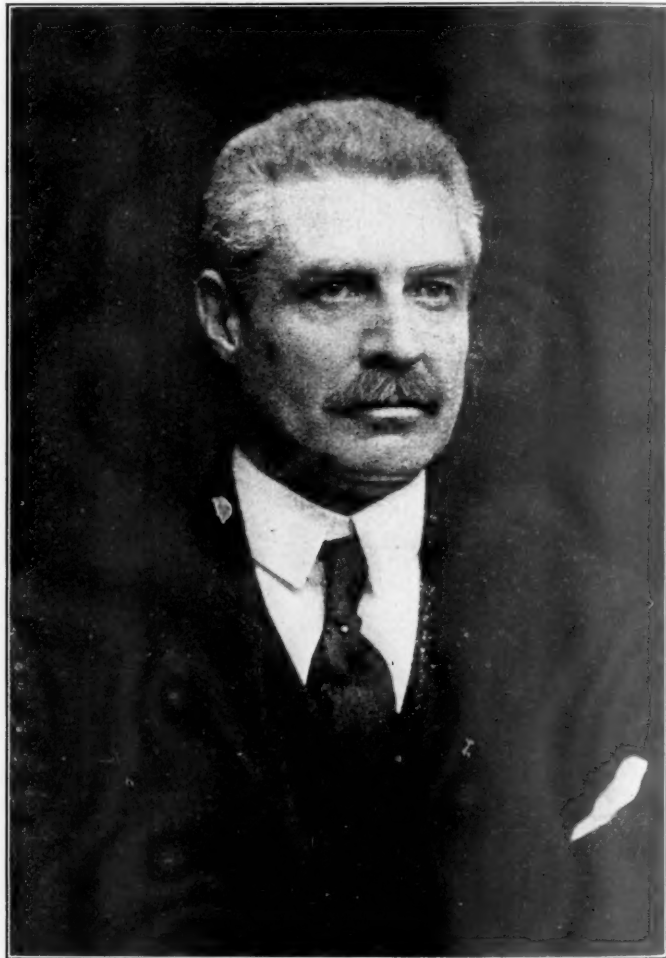
Hale Holden
President, Chicago, Burlington & Quincy

For some time past, the Special Committee on National Defense of the American Railway Association, which was appointed at the request of President Daniel Willard of the Baltimore & Ohio as chairman of the committee on transportation and communication of the Advisory commission of the Council of National Defense, has been working in co-operation with the office of the quartermaster general of the army of the United States making plans to promote in case of war, the effective use of the country's transportation facilities. These preliminary plans have now been completed and the general principles on which they have been based are explained in a statement issued by Fairfax Harrison, president of the Southern Railway, and general chairman of the Special Committee on National Defense, as follows:

"The plan of operation worked out here is in distinct contrast to that adopted in England at the outset of the war. There, the government immediately assumed the responsibility for the operation of the railroads and exercised its authority to that extent through a committee composed of the heads of the principal lines. The government guaranteed that the net earnings of the companies would continue to be what they had been before the war started.

"In this country the plan is that the government shall advise the railroads what service it requires and the responsibility will be upon the railroad managers to provide that service. When working to that end the railroads of the country will be operated practically as one system.

"It is planned to place the responsibility upon experienced railroad officers for producing results and the government's only function is to determine what the requirements are. It



Samuel Rea
President, Pennsylvania Railroad

is the belief of railroad companies that this will not only work for efficiency of service but for economy in cost as well. The above plan of co-operation between the government and the railways is most desirable as the latter are keenly appreciative of this opportunity to demonstrate to the country at large the value in time of war of railroads with elastic management.

"It is believed that the transportation companies will be able to afford to the government expeditiously all the service it may require without substantial interference with the commercial interests of the country. The government's business will receive preferential movement, but it is not anticipated that ordinary traffic will experience abnormal delays."

The organization of the Special Committee on National Defense consisting of 18 railway executives comprising four

district committees in the departments into which the army is organized, was described in the *Railway Age Gazette* of February 23 and March 9.

The following is an outline of the arrangement made between the committee and the war department for the relations between representatives of the American Railway Association and the military authorities:

RELATIONS BETWEEN A. R. A. AND MILITARY AUTHORITIES

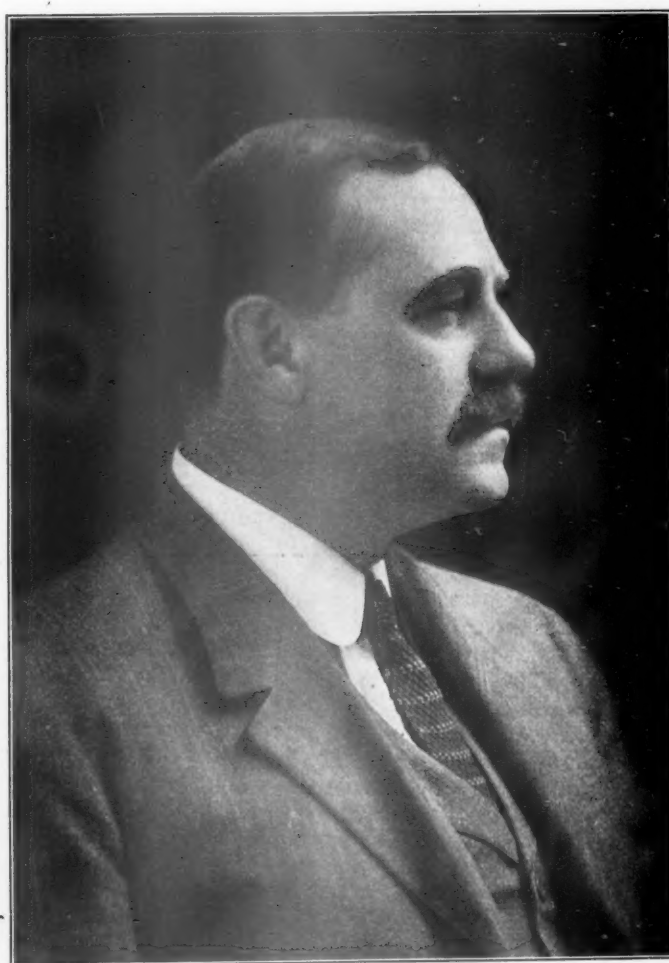
"Representatives of the American Railway Association designated by the Special Committee on National Defense of the American Railway Association will be located in the office of the quartermaster general; at each department headquarters; at each mobilization point; at each concentration point; and at each strategic point at which troops are to be assembled. Such other inspectors or representatives will be

in the transportation of troops but in any other matter pertaining to transportation in which their assistance may be requested. The American Railway Association representatives, immediately upon their arrival at the mobilization, concentration or other point to which assigned, must report in person to the commanding officer, presenting their credentials. The commanding officer should then assign them to duty with the camp quartermaster to whom they act as an assistant and through whom all instructions must be received.

"The assignment of the American Railway Association representatives to stations at the various points and posts designated should be of a permanent character, so that the proper officer of the quartermaster corps or of state authorities will be able to communicate with such representatives



Julius Kruttschnitt
Chairman of the Board, Southern Pacific



Howard Elliott
President, New York, New Haven & Hartford

designated as may be required to facilitate the co-operation between the transportation lines and the military service, and as the needs of the service may indicate.

"The American Railway Association representatives should be chosen from a class of men who will be broad-minded, and temperamentally men of such character as would take a broad view of transportation in movements of troops and supplies. They should wholly divest themselves of any disposition to work for, or in favor of, any particular transportation lines, but should apply themselves solely to the solution of the transportation problem in the manner most satisfactory to the government and in such fashion as can be most effectively executed by the railways. They are assigned to this duty as transportation experts and will assist the quartermaster, with whom they are serving, not only

and arrange in advance all especial details of mobilization and of movements to concentration and strategic points. Should it be impracticable for any reason for any representative so chosen to continue in that capacity, their places should be filled by other appointments and the quartermaster's office affected, as well as the office of the quartermaster general, should be notified.

"It is important that the American Railway Association representative, in each instance, be advised of any change in the office of the department quartermaster or quartermaster at mobilization or concentration point, in order that such representative shall have the advantage of personal contact with the new officer whenever a change is made. Quartermasters concerned should communicate in writing with the A. R. A. representative indicating any special duties in ad-

dition to those herein laid down that it would be desirable for the A. R. A. representative to perform.

"The department quartermasters, and quartermasters at mobilization and concentration points should communicate fully with the representatives of the American Railway Association at their respective locations, in order to effect a harmonious plan of procedure in advance of mobilization. These plans should be committed to writing and should be such as will conform to the provisions of this bulletin and to the "Handbook on Rail and Water Transportation," published by the office of the quartermaster general.

"The A. R. A. representatives stationed at department headquarters will receive from the department quartermaster, and those at other points from the camp quartermasters, advices regarding the movements of troops. These will show the time troops will be ready to move; the amounts of railroad equipment for each train, showing number of each class of cars required, other than tourist cars, number of persons to travel, amount of baggage, vehicles, guns, animals, and all other details necessary to enable railroad officials to act intelligently in assembling and placing the necessary equipment for prompt loading and entraining. The American Railway Association representative will take such action as may be necessary relative to prompt furnishing of the desired railway equipment. It will be his duty to communicate to the quartermaster any information that he may receive regarding the status of equipment for moving troops and supplies still in camp. His duties will include expeditious assembling of necessary equipment and arrangements for prompt loading and entraining at mobilization points, and arrangements for unloading and detraining and return of railway equipment from concentration points.

"The A. R. A. representative will communicate directly with the Bureau of the American Railway Association charged with the maintenance of information regarding disposition of equipment, its liberation and return, and all other information relating to railway equipment and movements required by that bureau to complete its records. He must furnish a copy of all such communications to the quartermaster with whom he is acting in co-operation.

"The central bureau established under the direction of the chairman of the Special Committee on National Defense of the American Railway Association should be such as to gather all necessary information regarding equipment needed, and available; arrange for transfer of equipment; expedite return of empties; keep informed as to threatened conditions of congestion; make provision for avoiding it; and assist in whatever way is practicable in the smooth operation of troop trains.

"The routing of troops from home sections to mobilization camps will be in the hands of the state authorities. The routing of troops from mobilization camp to concentration and strategic points will be in the hands of the quartermaster general of the army. Routing schedules will be furnished promptly by, or through, the department quartermaster to the camp quartermaster, showing the route to be used by each organization from the mobilization camp to concentration point or other destinations. These routes will be numbered consecutively, and in telegraphing it will only be necessary to refer to the route by number. Where movements are entirely within the department, routings will be in the hands of the department quartermaster. Owing to the limited amount of tourist equipment the assignment and distribution of tourist equipment will be in the hands of the office of the quartermaster general. Camp quartermasters will make direct requests on the quartermaster general for such equipment as far in advance as possible, when it is definitely known troops are ready to move, giving name of organizations, number of officers and men to move, route and approximate time of departure.

"The A. R. A. representatives at each camp will telegraph

daily, in cipher, to the A. R. A. Committee Central Bureau, departures for the preceding 24 hours, organizations (with strength) to move in next 24 hours, and strength still in camp with such other information as may be necessary for their records. The camp quartermaster should assist the A. R. A. representative in securing this information.

"As soon as the railway equipment is received the A. R. A. representative, or some competent person designated by him, will make a preliminary inspection of the same with a view to ascertaining immediately and correcting any defect. If necessary he will at once reject any unsuitable equipment and secure other equipment in its place. Before the troops are entrained a joint inspection of the equipment should be made by the A. R. A. representative and the train commander, or his representative.

"The camp quartermaster, after consultation with the train commander, should advise the A. R. A. representative as to the exact make-up of each train, showing the order in which the cars should be placed in the train. Trains should go through to destination intact, unless there is some exceptionally good reason to the contrary. Under no circumstances will troops be separated from their rations and messing facilities, or animals from their forage and care-takers.

"Particular attention should be paid to the supply of water for drinking purposes. The facilities that are sufficient for normal travel are usually inadequate for troop movements over long distances; a supplementary supply will be provided by placing a barrel filled with water on the platform of every coach or every second Pullman or tourist car.

"It is proposed that the A. R. A. committee shall take necessary steps to furnish information of all troop trains delivered to connections. This information should be telegraphed direct to the office of the quartermaster general or furnished immediately on receipt by the Special Committee on National Defense of the American Railway Association."

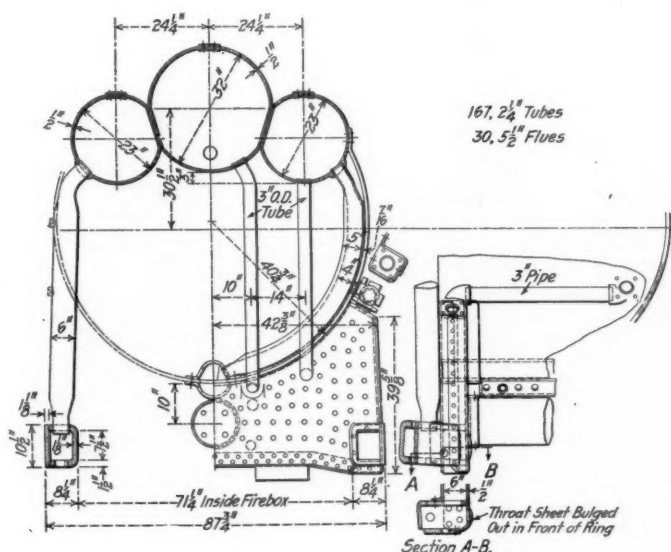
The central bureau at Washington is under the direction of George Hodges, chairman of the Committee on Relations between Railways of the American Railway Association, and assistant to the general chairman, who had charge of the bureau established at Washington last summer for handling the distribution of equipment in connection with the movement of troops to the Mexican border. It has established an office at 345 Woodward building. At the time of the first meeting of the Special Committee at Washington in March, arrangements were made for the co-operation of the district committees with the department commanders in their territories in a study of questions pertaining to the location of mobilization and concentration camps with reference to transportation facilities and to the engineering problems pertaining to terminal facilities at such points. It was also decided to appoint sub-committees from various branches of the railway service, including a traffic committee, a committee on transportation, a mechanical committee and a committee on military transportation accounting. These committees have since been organized and have held various conferences with the military authorities in working out the various problems assigned to them.

The organization of the American Railway Association has recently completed the handling of the militia organizations stationed on the Mexican border who were returned to their home stations. Upon their return, a large number of these troops were immediately assigned to guarding railroad property and bridges and other points of special importance in their respective states.

TRESPASSERS BEWARE!—Trespassing on railway property, at all times a perilous practice, involves an even greater hazard now that armed men are guarding the bridges and other structures. The man who now trespasses on a railway subjects himself to the peril of being shot.

McCLELLON WATER-TUBE FIREBOX

A water-tube firebox designed primarily to reduce the cost of maintenance and which also increases the firebox heating surface, has been in the process of development for a number of years by James M. McClellon, of Everett, Mass. A few years ago one was built and applied to a Boston & Maine locomotive. From the experience gained by that installation another design has been made and two have been applied to locomotives on the New York, New Haven & Hartford. It has been the aim of the designer to eliminate the use of staybolts and to divide the firebox into individual units which may better resist the expansion and contraction forces in



Sections Showing General Details of the McClellon Firebox

service and which may be renewed with but little difficulty. The only staybolts used in the firebox are in the throat and the foundation or mud ring, which is a chamber $7\frac{1}{2}$ in. by 6 in., extending along the sides and back of the firebox. The sides and back-head are made up of 6 in., $5\frac{3}{8}$ in. and 5 in. water tubes, and the crown is made up of three drums. Its construction is clearly shown in the illustrations. The tubes connect the drums with the foundation ring. The boiler is provided also with a combustion chamber $44\frac{1}{2}$ in. long, the

long, 23 in. outside diameter and $\frac{1}{2}$ in. thick, with the exception of a boss 6 in. wide and $1\frac{3}{4}$ in. thick, into which the side water-tubes are fitted. These drums were made from a $1\frac{3}{4}$ in. plate, being planed to $\frac{1}{2}$ in. in thickness, the boss alone remaining the full thickness of the sheet. This boss may be obtained by a less expensive method and was only made in this manner because at the time the firebox was made no other suitable method was available. The front end of these drums is shaped to fit the barrel of the boiler and to make suitable connection with the tube sheet. The two side drums are butt welded for $12\frac{1}{4}$ in. back from this end to facilitate shaping and for the remainder of their length have a single riveted butt seam with $5\frac{1}{2}$ in. by $7/16$ in. inside and outside welt stripes. They are round in the central portion, with the exception of a flattened surface $8\frac{1}{2}$ in. wide, where they are riveted to the middle drum. They are slightly deformed at the back end to receive the back head water-tubes.

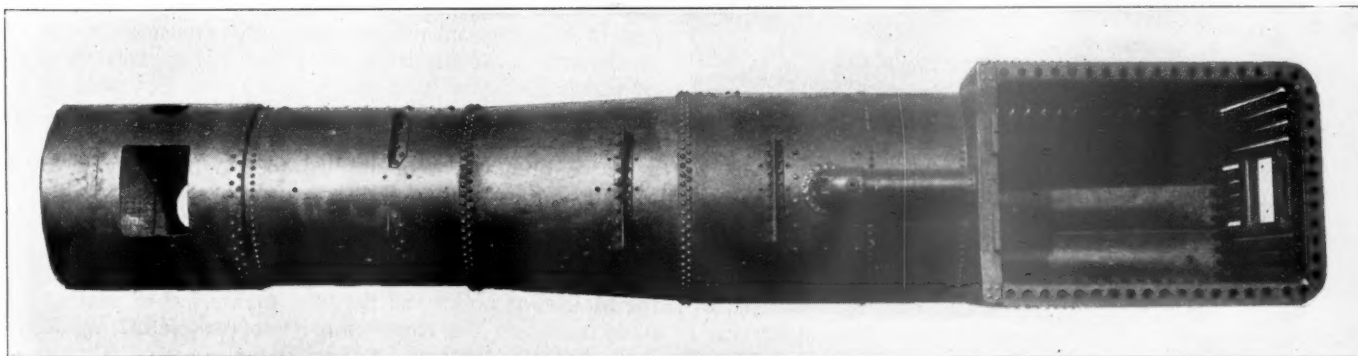
The middle drum is $148\frac{3}{4}$ in. long, 32 in. outside di-



Steam Drums for the McClellon Firebox

ameter, and $\frac{1}{2}$ in. thick. It has a flat surface $8\frac{1}{2}$ in. wide on both sides, where it is riveted to the side drums. This drum has a single riveted butt seam similar to the side drums, being welded for a distance of $11\frac{1}{2}$ in. back from the front end. The front ends of all three drums open directly into the barrel of the boiler, which is of the same design as the regular type of locomotive boiler and is equipped with a superheater. The whistle and safety valve openings are located in the middle drum.

The sides of the firebox are made up of fifteen 6-in. tubes, equally spaced for over a distance of 91 in., which gives sufficient space between each tube to allow for expansion. These tubes are expanded and belled into both the foundation



Bottom View of a Locomotive Boiler Equipped with the McClellon Water-Tube Firebox

sides of which are made up of tubes. These tubes follow the inside contour of the shell and extend from the outside drums to a circulating chamber, which extends between the tube sheet and the throat. Throughout the construction of the firebox, autogenous welding plays an important part and without it this type of firebox would not have been possible.

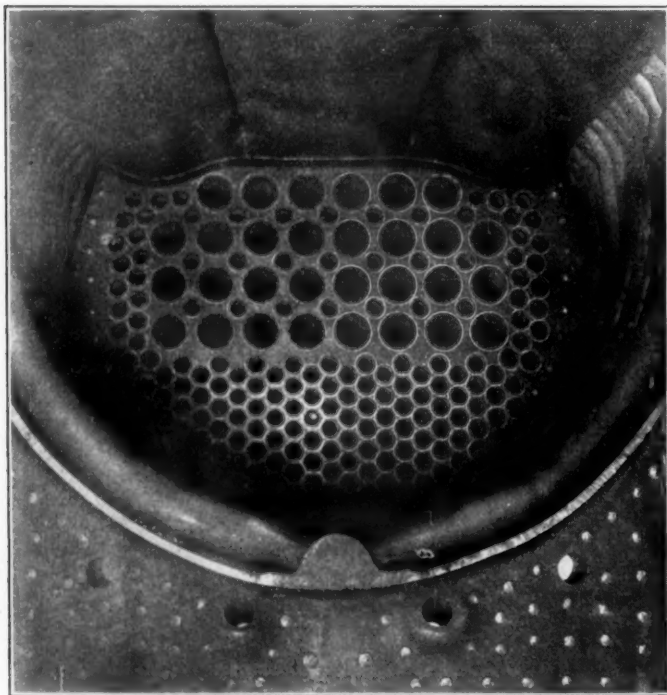
The drums are shown by themselves ready for application in one of the photographs. The outside drums are $148\frac{1}{4}$ in.

ring and the side drums. The corner tubes have two tubes of the same diameter spliced on to them by welding, to give the necessary slope to the back-head. Three $2\frac{1}{2}$ in. holes drilled in these tubes at each splice form the water connection between them. There are eight $5\frac{3}{8}$ in. tubes in the back-head—four each side of the firedoor. Four 5 in. tubes connect the upper firedoor header with the middle drum. This header is formed by flattening a $6\frac{3}{4}$ in. tube and welding it to the

long back-head tubes on each side of it. A $3\frac{1}{2}$ in. hole is drilled in each of these tubes to make a water connection between them and the header. The short tubes are rolled into this header through $2\frac{1}{2}$ in. plug holes in the under side of the header. The bottom door header is made up of two flattened tubes connected to each other and to the foundation ring by four $2\frac{7}{8}$ in. thimbles. The two sets of thimbles are in line and are rolled into the headers through the plug holes in the bottom of the foundation ring. The top one of the two is connected to the long back-head tubes in the same manner as the upper header, and the lower header is closed at the ends by welding in a plate, simply acting as a filler. Lugs are also provided on the back-head pipes for supporting the lagging, firedoor and other parts.

The foundation or mud ring is $107\frac{5}{8}$ in. long and $71\frac{1}{4}$ in. wide on the inside and extends along the sides and back of the firebox, terminating in the throat sheet. It is made up of a rolled plate $1\frac{1}{2}$ in. thick, pressed to the shape of a channel with inside dimensions $7\frac{1}{2}$ in. by 6 in., the legs extending outward. A cover plate is attached to the outside legs of the ring by $\frac{7}{8}$ in. screw rivets and it is welded to the channel at the inside corners. This plate is further supported by 1 in. Falls Hollow staybolts through the center. The water-tubes are expanded and belled into the ring through $3\frac{1}{2}$ in. plug holes in the underside of the ring. The front portion of the ring, to which is riveted the throat sheets, is a steel casting similar to that used in the regular type of firebox and to which are bolted the expansion sheets.

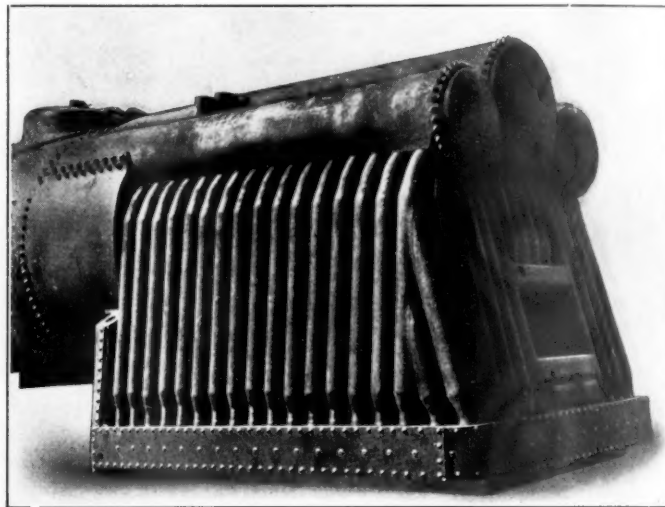
The throat sheets are $\frac{1}{2}$ in. thick and have a 6 in. water



Combustion Chamber for McClellon Firebox

space. The sheets are flanged and riveted to the boiler shell at the top and to the cast steel ring which forms the front of the foundation ring, at the bottom. The inside sheet is screw riveted and welded to the inside of the side foundation ring. The sides of the throat are made by flanging the sheets and fastening them by a single riveted lap seam. The throat sheet outside of the foundation ring, is the only member of the firebox that has any staybolts. The passage of the water through this part of the boiler is rapid. Water is fed to it through the circulating chamber into which the combustion chamber tubes pass. In addition to this, there is a 12 in. feed pipe extending from the middle of the throat

forward into the bottom of the last course in the barrel. The throat also is connected with the barrel at the top on both sides by a 3 in. pipe and to the drums by four 3-in. brick arch tubes. The combustion chamber is $44\frac{1}{2}$ in. long and contains from the front to the back, two $2\frac{1}{2}$ in. tubes, eight 4 in. tubes and one 5 in. tube, on each side. These tubes extend between the side drums at the top and the circulating chamber at the bottom, being curved to the shape of the boiler shell. They are expanded into the drum and the circulating chamber. The circulating chamber consists of a $\frac{5}{8}$ in. flanged plate. A second flanged plate, located on the outside of the shell and similar in shape to the one which receives the tubes, is provided with plug holes opposite each tube, through which the roller and bell tools may be used to expand the combus-



General Arrangement of the McClellon Locomotive Firebox

tion chamber tubes in the upper flanged plate of the circulating chamber. The bottom ends of the two back tubes on each side are welded in place as, on account of the throat, it is inconvenient to roll them. There is a direct connection between the boiler barrel and the circulating chamber and also between it and the throat. Since this firebox was built, Mr. McClellon has re-arranged this circulating chamber, making it of much simpler construction, but accomplishing the same purpose. The firebox is lagged with a layer of high temperature cement, which is filled in around each tube almost to the center and for a half-inch outside of it. This cement is also reinforced by steel-crete expanded metal and on the outside of this is placed $1\frac{1}{2}$ in. Thermofelt lagging, on which the jacket is applied. The 12 in. feed pipe extending between the last boiler course and the throat is lagged with asbestos cement and jacketed.

These fireboxes were applied to two of an order of 15 Mikado locomotives, weighing a little over 250,000 lb. The firebox heating surface of the ordinary boiler was 229 sq. ft. and of the McClellon boiler 308 sq. ft. There was also a little larger amount of heating surface in the fire tubes in the McClellon boiler and the total square feet of heating surface, including the superheater flues, was 2,827 sq. ft. for the ordinary boiler and 2,937 sq. ft. for the McClellon boiler. The locomotives have not been in service long enough to determine the benefits to be derived from the McClellon firebox.

THE PRESS AND THE RAILROADS.—The fall of the southern terminal of the proposed Berlin-Bagdad railroad was announced with seven-column headlines, but a threatened walkout of 400,000 trainmen in the United States had to strive for weeks to reach first page. Oh, well, even newspaper editors can't be uniformly consistent.—*Iron Trade Review*.

GREATER PENETRATION IN TREATING DOUGLAS FIR

By O. P. M. Goss

Consulting Engineer, West Coast Lumbermen's Association, Seattle, Wash.

The large volume of lumber used for railroad ties warrants a very careful study of means of decreasing the intensity of the creosote treatment of Douglas fir railway ties by the use of perforations. Accordingly, the West Coast Lumbermen's Association and the Association of Creosoting Companies of the Pacific Coast have devoted considerable study to this subject and have made a large number of experiments, both independently and in co-operation with some of the railroads in an effort to develop the most satis-

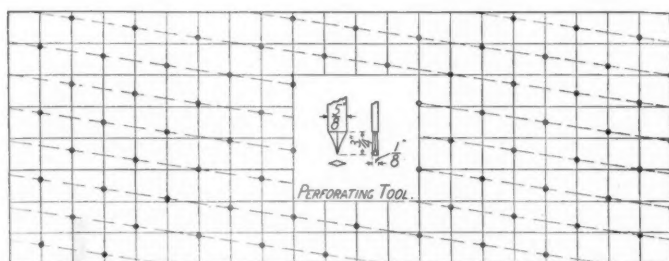


Fig. 1—Diagram of Perforation Spacings

factory method of preparing and creosoting Douglas fir ties.

The mechanical life of a Douglas fir tie untreated is probably at least 15 years under normal railroad traffic. Such ties, however, last only 6 or 7 years in service, due to decay, which eventually entirely destroys the tie. Douglas fir

treatment effectively without material injury to the wood fibre. If the above points are accomplished it is certain that a greatly increased length of life will result from the use of Douglas fir ties.

In investigating this subject an effort has been made to take advantage of the fact that creosote oil enters wood along the fiber with much greater ease than in any other direction. The idea was therefore conceived by the writer of perforating the timber to provide a means of controlling the distribution of the creosote oil. This same thought had come to others and B. Kuckuck made some tentative experiments in co-operation with the St. Helens Creosoting Company of Portland, Ore., about 1913. The perforations used were made by means of a drill which bored a small hole about 1-16 in. in diameter.

It has been found that more satisfactory perforations may be made by punching the holes rather than by boring. By making perforations at short intervals it is possible to get a thorough penetration of the oil in the timber equal to the depth of the holes without subjecting it to a severe treatment. A tool which seems to give good results is shaped as shown in Fig. 1. It seems necessary to cut the fiber of the wood in order to get complete distribution of oil with a mild treatment.

A machine was designed and built by the Columbia Creosoting Company, Portland, Ore., for perforating ties. This machine runs at a speed of about 75 ft. per min. and will perforate ties as rapidly as it is possible for laborers to handle them. The vertical rolls perforate the sides and the horizontal rolls the top and bottom faces. The ties should, of course, be bored for spikes before treatment.

A good spacing for the perforations is shown in Fig. 1. It will be noted that these perforations are so arranged that it is only necessary for the creosote to pass along the grain a distance of $3\frac{1}{2}$ in. and across the grain about 1-16 in. from each perforation, to give complete penetration on

TABLE 1.—RESULTS OF TESTS IN COMPRESSION PERPENDICULAR TO THE GRAIN ON AIR-SEASONED DOUGLAS FIR TIE SECTIONS.

Tie No.	Compressive Strength at Elastic Limit in Pounds per Square Inch			Strength of treated	
	Natural	Unperforated	Perforated	Unperforated in per cent of natural. Natural = 100 per cent	Perforated in per cent of natural. Natural = 100 per cent
1.....	732	736	657	100.5	89.8
2.....	611	523	588	85.6	96.3
3.....	625	576	575	92.2	92.0
4.....	571	542	619	94.9	108.4
5.....	611	576	526	94.3	86.1
6.....	508	507	480	99.8	94.5
7.....	625	502	603	80.3	96.5
8.....	441	541	534	122.7	121.1
13.....	654	647	635	98.9	97.1
14.....	579	543	479	93.8	82.7
15.....	529	587	582	111.0	110.0
16.....	450	411	382	91.3	84.9
41.....	699	730	647	104.5	92.6
42.....	524	573	527	109.3	100.6
43.....	564	680	674	120.6	119.5
44.....	462	654	614	141.6	132.8
45.....	544	585	592	107.5	108.8
47.....	496	559	556	112.7	112.0
48.....	718	706	726	98.4	101.1
49.....	645	504	580	78.2	90.0
50.....	467	609	758	130.4	162.3
51.....	689	602	606	99.0	88.0
52.....	604	677	647	112.0	107.1
53.....	732	634	660	86.6	90.2
54.....	836	833	842	99.6	100.7
55.....	558	537	552	96.2	99.0
56.....	541	597	586	110.4	108.3
57.....	613	568	570	92.7	93.0
58.....	567	499	533	88.0	94.0
59.....	512	525	509	102.5	99.3
60.....	968	855	817	88.3	84.4
Total	18,675	18,698	18,656	.....	.....
Avg.....	602	603	602	100.2	100.0

has the required strength to give long life in the roadbed when used as a tie, provided it is possible to prevent the development of decay. The experiments which have been made have aimed at two principal objects: (1) The prolonging of the natural life of Douglas fir ties by preservative treatment and (2) the application of the preservative



Fig. 2—The Machine for Perforating Ties

all faces of the tie to a depth equal to that of the perforations. The sizes of the perforations are approximately $\frac{1}{8}$ in. across the grain.

The question as to the effect of perforating upon the strength of the wood came up immediately for consideration. For the purpose of securing reliable data on this subject, strength tests were made on 31 air-seasoned ties. These ties were all tested in compression perpendicular to the grain.

A section 3 ft. long was cut off of one end of each tie, and tested in a natural condition. One-half of the remaining section was perforated to a depth of $\frac{3}{4}$ in. on all faces in accordance with the spacing shown in Fig. 1. This 6 ft. section was then placed in the retort and the ties were heated in creosote oil under atmospheric pressure at 170

deg. F. for four hours. Approximately 100 lb. pressure per sq. in. was applied on the oil for three hours at a temperature of 170 deg. F., after which the oil was drained off and a final vacuum of approximately 24 in. was drawn for one-half hour.

After treatment the ties were tested by the writer. The results of these tests are shown in Table 1. It will be noted that there was no loss in strength, due to the creosote treatment, as shown by the average results and also that the perforations made in the ties before treatment had no detrimental effect upon the strength. Examination of the specimens treated showed a much improved penetration for the perforated pieces and indicates the possibility of gaining greatly increased efficiency in the use of railway ties when creosoted by the method above indicated. The principal reason for the fact that no loss in strength occurred is that by means of the perforations it is possible to secure an effective penetration and distribution of the oil without the use of a severe heat or pressure treatment.

PROPOSED LEGISLATION AFFECTING RAILWAYS

Whether any legislation is to be considered at the extra session of Congress which was convened on April 2 is as yet undetermined. The party leaders at the beginning of the session had no thought of Congress giving much consideration to other subjects than the measures necessary for the prosecution of the war and the passage of the appropriation bills which were held up by the filibuster in the Senate at the close of the last session. These include the sundry civil appropriation bill carrying the appropriation for the Interstate Commerce Commission and the valuation work, and also the appropriation for the continuance of the work on the Alaska government railroad. Many members of Congress who have special bills to press will make a strong effort to have Congress continue in session until such bills have been acted upon and there is a possibility that Congress will sit continuously until the opening of the regular session in December, with frequent recesses. In this case there would be an opportunity for some general legislation which would doubtless include consideration of many proposed measures affecting the railroads. So many bills, both of a private and a public nature, were introduced during the first days of the session that the government printing office was unable to supply sufficient copies for general distribution. Among the bills that have been introduced thus far of direct interest to railroads are the following:

H. R. 130, by Mr. Keating, April 2. To Committee on Judiciary. Provides that charges for service in the transportation of property shall be paid within 90 days from the time of the delivery of the shipment, under penalty of a fine not to exceed \$5,000.

H. R. 148, by Mr. McClintic, April 2. To Committee on Interstate and Foreign Commerce. A bill to regulate the issuance of railroad securities, providing that they shall not be offered for sale until they have been approved by the Interstate Commerce Commission.

H. R. 323, by Mr. Esch, April 3. To Committee on Interstate and Foreign Commerce. Requiring the installation of the block system and automatic train control devices on interstate railroads.

H. R. 324, by Mr. Esch, April 3. To Committee on Interstate and Foreign Commerce. Omnibus safety appliance measure requiring interstate railroads to be equipped with steel cars, automatic train control devices, and headlights affording a minimum conform illumination to be prescribed by the Interstate Commerce Commission. It would also give the Interstate Commerce Commission power to regulate matters pertaining to maintenance of way.

H. R. 328, by Mr. Esch, April 3. To Committee on Interstate and Foreign Commerce. To confer authority on the Interstate Commerce Commission to regulate the exchange, the interchange and return of cars used in interstate commerce.

H. R. 287, by Mr. Hayden, April 2. To Committee on Judiciary. To prohibit the shipment of intoxicating liquors in interstate commerce.

H. R. 151, by Mr. Randall, April 2. To Committee on Judiciary. To divest intoxicating liquors of their interstate character.

H. R. 384, by Mr. Austin, April 3. To Committee on Interstate and Foreign Commerce. To prohibit interstate carriers from transporting products of any factory or mine in which convicts are worked.

BRITISH RAILWAY LINES IN FRANCE

Frank H. Simonds, the military expert of the New York Tribune, in an article entitled, "British Armies 'Somewhere in France,'" in a recent issue of that paper, draws attention to the fact that there are now five British armies in France holding 125 miles of railroad line. These five armies, of course, depend upon the channel ports for their supplies. He then states:

"A good deal of uninformed criticism has been heard in the world as to the relative slowness of the British in taking over French sectors. But the difficulties of such labor are almost incalculable, and chief among these are the problems of transport. Before the war the railroad systems leading from the channel ports to the interior of northern France had their center in Paris, and their chief mission the transport of people and goods, either from the channel to Paris or from the same ports to the industrial district of France, which is now in German hands.

"While the British occupied only the front from Ypres to La Bassée they were well served by the railroads from Calais to Lille. But as their line moved southward they were faced by the necessity of depending on single track lines not designed to carry heavy traffic, lines which ran at right angles to the main trunk railways leading southward toward Paris. This condition was entirely satisfactory to the French while they held the lines between La Bassée and Roye, because the French were supplied from the south and from Paris.

"But before the British can take over a sector they have to reconstruct railroad lines and join them up with their bases, which are on the coast and not in Central France. The result has been an immense railway construction in France by the British. Whole British lines have been transported to the continent, British railway men have taken over the task of refitting and rebuilding lines, and Sir Douglas Haig told me of one instance where he asked the railroad men of England, who had visited him, for prompt assistance and they promised him eight hundred miles of line in an incredibly short time, when his request had been for three hundred.

"I presume no one is better informed than the German as to this great railroad transformation that is going on in France.

"As for Boulogne, Calais and Havre, they are the busiest ports in Europe today. No one who has not visited them can imagine the activity that is going forward all the time, the huge numbers of troops that are arriving, the vast stores of supplies that are accumulating. And all this goes on despite the German attacks in the air—the aeroplane raids, which are of such frequent occurrence, almost never excite comment in the press—and despite all the attempts of the submarines to cut the sea courses, which are, in fact, the life lines of British military power in France."

Spanish 12-Wheel Passenger Locomotives

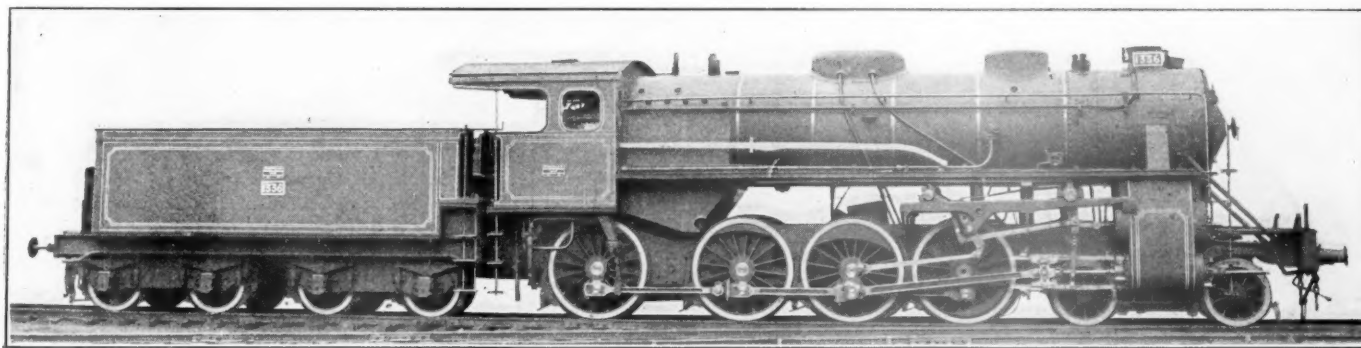
Balanced Compound Engines Built in America to the Railroad Specifications Using the Metric System

AMONG the locomotives built for export by the American Locomotive Company during the past year is an order of twenty-five 4-8-0 type locomotives for the Madrid, Zaragoza & Alicante Railway of Spain. These locomotives were built strictly in accordance with specifications and drawings furnished by the railway company, all the dimensions being given in the metric system, which the workmen used direct.

The Madrid, Zaragoza & Alicante is one of the two largest railways in Spain and connects Madrid, Zaragoza, Alicante,

frames and drive on the cranked axle of the leading pair of driving wheels, while the high pressure cylinders are outside the frames and are connected with the second pair of driving wheels.

The high and low pressure cylinders on each side of the engine are cast integral with the half-saddle. The low pressure cylinders are raised and inclined to permit the removal of the pistons and the construction is somewhat different from that used in American practice. It will be seen on the elevation drawing of the locomotive that the flanges to which the



Madrid, Zaragoza & Alicante 12-Wheel Locomotive

Barcelona, Valencia, Cordova and Seville. The locomotives are duplicates of others used on this road which were built in Germany and were designed to haul a load of 280 tons back of the tender at a speed of 50 km. (31 miles) an hour on 15-mm. grades (.015 per cent) over curves of 400 meters

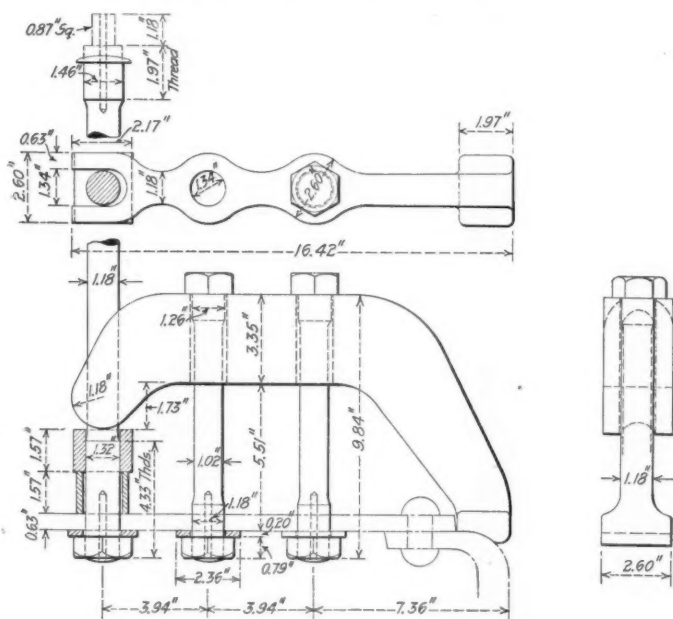
rear low pressure cylinder heads are bolted extend in from the cylinder walls toward the center, instead of outward, the cylinders thus being partially closed at the rear ends. The cylinder heads are bolted to the inside face of these flanges, being applied from the inside of the cylinders. On the outer face of each cylinder head, which extends through the opening in the end of the cylinder, is cast the lug which supports the guide bar.

The steam distribution is controlled by a single piston valve on each side of the engine, driven by Walschaert valve gear. The ends of each piston valve are 17.32 in. in diameter while the middle portion, which controls the distribution to the high pressure cylinder, is 12.6 in. in diameter. The use of this type of valve is not unusual in European practice. The valve motion is reversed by a screw gear which does not differ essentially in its design from American practice.

The main frames are of steel plate 1.1 in. thick, with front rails of soft steel 3.94 in. thick. The front bumper and deck are also of steel plate. All the axles are of forged steel, the crank axle being a single forging of basic open hearth steel having specified tensile strength limits of 78,227 lb. per sq. in. and 92,450 lb. per sq. in. and an elongation of not less than 18 per cent in about 6 in. Under-hung springs are used, this arrangement being better adapted to plate frame construction.

Contrary to American practice, these locomotives have what may be called a five-point system of equalization. The front truck, first two pairs of driving wheels, and the last two pairs of driving wheels are each equalized in a separate system. There is no cross equalization. The desired weight distribution is obtained by means of adjustable spring hangers. The front end of the locomotive is carried on a four-wheel truck of the railway company's design, the load being transferred through a spherical center pin bearing which is shown in one of the drawings.

The front end is fitted with a high exhaust pipe, which reaches approximately to the center line of the boiler. It is



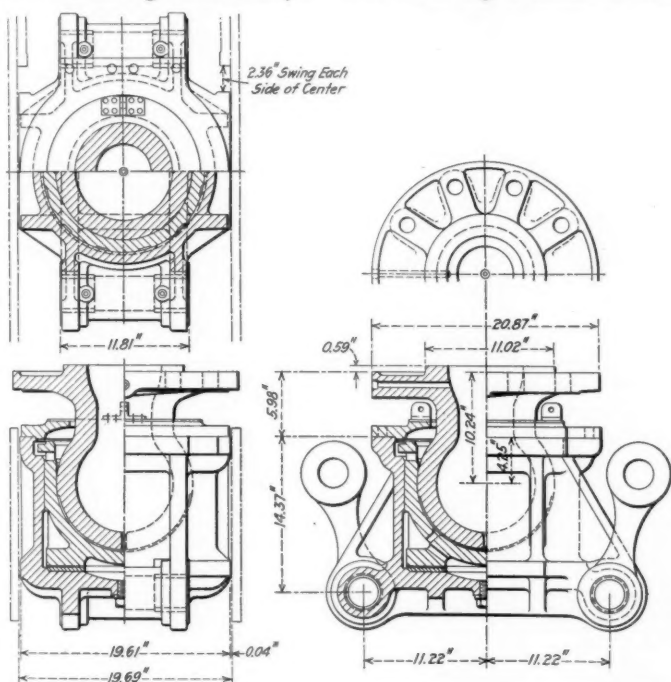
Longitudinal Crown Bar Expansion Stay

(1,312 ft.) radius; a load of 310 tons at a speed of 60 km. (37.28 miles) an hour on 10-mm. grades (.01 per cent) over curves of 400 meters radius; and a load of 340 tons at a speed of 100 km. (62.13 miles) an hour on level track over curves of 700 meters (2,297 ft.) radius.

The engines are of the four-cylinder, balanced compound type. The low pressure cylinders are placed between the

provided with an adjustable tip which can be lowered into the pipe, thereby increasing the outlet area by opening an annular passage around the tip.

The boiler is of the straight top type, the inside firebox being of copper. On 19 locomotives the water-space stays are of manganese bronze. On the remaining six locomotives copper stays are applied to the throat and in the lower rows of the sides and back head, manganese bronze being applied in the upper rows. All of the staybolts are drilled entirely through with a central hole .2 in. in diameter. The holes are stopped on the outside with steel plugs, the inside being left open. Crown bars are used on the first two transverse rows of crown stays. Instead of the transverse bars, which at one time were commonly used in America, the bars are arranged longitudinally. Each bar rests on the top of the tube sheet at the front end and carries one bolt in each of the two transverse rows. At its rear end it is supported on a square block which is threaded onto the lower end of the crown stay in the next row back. A sleeve of 1½-in. pipe is placed between this block and the crown sheet. Part of the load carried by the crown bar bolts is thus transmitted to the first row of through crown stays. The water leg is closed at the



Details of the Spherical Engine Truck Center Pin Bearing

door opening with a cast steel door ring to which are riveted the copper door sheet and the steel back head sheet.

The principal dimensions and proportions are as follows:

General Data	
Gage	5 ft. 6 in.
Service	Passenger
Fuel	Bit. coal
Tractive effort, simple	35,500 lb.
Tractive effort, compound	29,550 lb.
Weight in working order	192,900 lb.
Weight on drivers	136,900 lb.
Weight on leading truck	56,000 lb.
Weight of engine and tender in working order	315,900 lb.
Wheel base, driving	18 ft. 8½ in.
Wheel base, total	31 ft. 9¾ in.
Wheel base, engine and tender	58 ft. 2¾ in.
Ratios	
Weight on drivers ÷ tractive effort, simple	3.9
Weight on drivers ÷ tractive effort, compound	4.6
Total weight ÷ tractive effort, compound	6.5
Tractive effort × diam. drivers ÷ equivalent heating surface*	593.3
Equivalent heating surface* ÷ grate area	73.1
Firebox heating surface ÷ equivalent heating surface, per cent.	5.1
Weight on drivers ÷ equivalent heating surface*	43.5
Total weight ÷ equivalent heating surface*	61.3
Volume equivalent simple cylinders	9.3 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	338.2
Grate area ÷ vol. cylinders	4.6
Cylinders	
Kind	Compound
Diameter and stroke	16.54 in. and 25.2 in. by 25.59 in.

Valves	
Kind	Piston

Wheels	
Driving, diameter over tires	63 in.
Driving, thickness of tires	3 in.
Driving journals, front, diameter and length	8.86 in. by 9.06 in.
Driving journals, fourth, diameter and length	7.87 in. by 9.84 in.
Driving journals, others, diameter and length	7.87 in. by 9.06 in.
Engine truck wheels, diameter	38¾ in.
Engine truck, journals	6.3 in. by 11.81 in.

Boiler	
Style	Straight top
Working pressure	213.4 lb. per sq. in.
Outside diameter of first ring	66½ in.
Firebox, length and width	82¾ in. by 74¾ in.
Firebox plates, thickness	crown, sides and back, .63 in.; tube, .63 in. and 1.18 in.
Firebox, water space	front and back, 3.54 in.; sides, 2.76 in.
Tubes, number and outside diameter	185—1.97 in.
Flues, number and outside diameter	24—5.24 in.
Tubes and flues, length	17 ft. 4.9 in.
Heating surface, tubes and flues	2,233.5 sq. ft.
Heating surface, firebox	161.5 sq. ft.
Heating surface, total	2,395.0 sq. ft.
Superheater heating surface	500.0 sq. ft.
Equivalent heating surface*	3,145.0 sq. ft.
Grate area	43 sq. ft.

Tender	
Tank	Water bottom
Frame	Channel
Wheels, diameter	38¾ in.
Journals, diameter and length	5.12 in. by 10.04 in.
Water capacity	6,600 gal.
Coal capacity	6½ tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., April 10, 1917.

CONFERENCE ON PROPOSED RATE ADVANCE

Ways and means for putting into effect the general advance in freight rates asked by the railroads were discussed at an informal conference today between the members of the Interstate Commerce Commission and committees of counsel and traffic officers representing the eastern, western and southern carriers. The conference was called at the request of the commission for the purpose of considering the many details involved in the application of the roads to be allowed to make the advance by filing supplements to the existing tariffs and to give the roads an opportunity to explain just what their proposals include. While there has been no definite indication as to the intentions of the commission, the character of the questions asked by the commissioners throughout the conference gave the impression that they recognized the emergency confronting the carriers and it seemed to be tacitly assumed that there would be some advance in rates and that the principal points to be considered were as to the modus operandi.

The commissioners were especially interested in the expressed willingness of the carriers to agree not to contest an order of the commission for a general reduction of rates if at some time in the future the reasons for an advance should have passed away and there was some suggestion of an advance for a limited period only, although this idea was opposed by the carriers. The eastern and western roads were desirous that any advance should become effective on June 1, while the southern lines were somewhat doubtful whether they could complete the necessary preliminaries in that time. There was a general agreement upon the part of the roads that the advance should apply to rates involved in unexpired orders of the commission and it was announced that tariffs now under suspension would be withdrawn so that new ones could be filed on the advanced basis.

The eastern lines were represented by George Stuart Patterson, general solicitor of the Pennsylvania, and a committee headed by George F. Randolph, commissioner for the lines in Official Classification territory; the western lines by F. H. Wood and a committee headed by E. S. Keeley, vice-president of the Chicago, Milwaukee & St. Paul; the Southern lines by R. Walton Moore and a committee headed by Lincoln Green, vice-president of the Southern.

Mr. Patterson announced at the outset on behalf of the

eastern lines that it was recognized that the proceeding was an unusual one, as the first in which all the roads in the country had asked for a general advance, and that, as the roads were asking for it on the ground of increased operating expenses and increased capital charges, they were willing to agree, that if the conditions on which the request is based are found not to be permanent, upon an investigation similar to that by which the advance may be granted, the commission may order a general reduction of the advanced rates which may be allowed and the roads will put it into effect without questioning it on the ground that the specific rates had not been considered. Mr. Moore and Mr. Wood made similar statements on behalf of southern and western roads.

This point was brought up again later when Commissioners Meyer and Daniels asked if the same purpose could not be accomplished by the issuance of an order automatically expiring on a certain date unless the commission found at the time that the advances ought to be continued. Mr. Patterson thought that an advance with such a string tied to it would not have the desired effect in improving the credit of the roads and said that the situation created by the present emergency is likely to last for some time because there is no chance that wages may be reduced and little hope of any reduction in the prices of materials in the near future. He then explained that his original statement was not intended to bind the stockholders of the roads not to contest any order for a general reduction of rates to such an extent as to be confiscatory some years hence in case there should be a change in the personnel of the commission. He felt that he would not have the right to make such an agreement. This point aroused a general discussion in which the general opinion expressed by the railroad representatives was that such a reservation was not necessary, although Commissioner Clark remarked that the suggestion as to the possibility of a new commission might be prophetic in view of the proceeding under discussion.

Mr. Moore said the southern lines were willing to agree not to contest in court any order of the commission taking back the advance or part of it, saying that if the commission should find the advance no longer necessary the roads would submit. Mr. Wood said that the roads were asking the commission to act expeditiously and in a somewhat extraordinary way and that if the necessity should pass away the commission should have the same authority to act expeditiously to restore the previous status. Mr. Patterson was willing to agree to this but could not bind the stockholders indefinitely.

Commissioner McChord asked what would be the objection to proceeding in the regular way by filing tariffs, or supplements, which the commission might suspend for 30, 60 or 90 days pending an investigation. If the commission has not completed its investigation in that time, he said, the tariffs might go into effect and the roads would have the increased revenue, and if it does come to a conclusion it would simply issue its report. He said he recognized the emergency and was not trying to interpose any obstacles, but that this plan would conform to the legal procedure. The railroad representatives objected to the idea of suspension. Mr. Moore suggested that the carriers file the tariffs and that if there is no protest they will go into effect. If there is a protest the commission might hold conferences or hearings at which it would decide whether or not it could allow the rates to become effective without suspension. He emphasized the seriousness of the situation by saying that it has been intimated that the government might find it necessary to take over certain railroads for military purposes which would increase the burden of the other roads that would be left to handle commercial traffic. George F. Brownell, vice-president and general solicitor of the Erie, also urged the commission to hold conferences before suspending the rates, and said that an order limited to one year would not serve the purpose because it would not justify a

road in incurring obligations running for more than that time and therefore would not improve credit.

The question as to how unexpired orders of the commission should be treated had been raised by Commissioner Clements at a previous conference. The lawyers contended that rates involved in such orders should be advanced, because they were as much affected by the new conditions as other rates and because they were fixed with relation to the other rates which are proposed to be advanced. L. F. Loree, president of the Delaware & Hudson, J. B. Kerr, president of the New York, Ontario & Western, and Mr. Brownell of the Erie urged especially the importance of including the rates on anthracite coal which are involved in an outstanding order. Mr. Loree said 40 per cent of the freight earnings of his road are from anthracite and that a 20 per cent advance would no more than compensate for the increases in wages and prices of fuel and supplies. He also urged the importance of an early advance to establish the credit of the roads, especially as the preferred service which the government would require of the roads along the Atlantic seaboard would increase their expenses and reduce profits. It was stated that the roads would expect to show that the new conditions apply to the rates involved in outstanding orders and that they will file with the commission a statement of the tariffs affected by such orders.

W. C. Maxwell, vice-president of the Wabash, spoke on behalf of the Central Freight Association roads, saying that in the five per cent case the commission had recognized that the C. F. A. rates should be advanced and that the roads had been working on them for two years but had encountered many obstacles and had not even secured the original five per cent advance in some states. The roads had filed what they considered a modest readjustment of these rates in October, which has been suspended by the commission, and he asked that they now be allowed to go into effect in order to afford a proper foundation for the proposed general advance. A formal petition to this effect has been filed with the commission by the C. F. A. roads.

It was announced on behalf of all the roads that generally speaking they intend to hold up any proposed new rates which might be filed for the purpose of making adjustments until the question of an advance is settled so that all rates may be treated on the same basis, and that differentials that would be affected by the percentage advance would be taken care of by filing new tariffs as soon as possible. Mr. Randolph said that this would result in some advances amounting to more than 15 per cent and some to less than that amount but that the general result would hardly increase freight revenues more than 10 or 11 per cent. The roads will petition the commission to be allowed to omit fractions of a cent in stating rates, dropping the fraction if less than 49/100 of a cent and making it one cent if more than that.

The first stage in the application of the roads for the advance was completed when the southern roads and their connecting steamship lines filed a formal petition with the commission on April 6 somewhat similar to those filed by the eastern and western lines, asking authority to increase rates upon short notice by supplement to the existing tariffs. This petition was more specific than the others in that it asked definitely for an advance of 15 per cent in all interstate rates except coal and coke on which a maximum advance of 15 cents a ton was asked. The petition represents that "by reason of large increases in the wages of employees and in the prices of fuel and other materials and supplies, coupled with which is the prospect of further increases, an emergency has been created which requires that those carriers be promptly afforded, by advance in their freight transportation charges, an increase of earnings which will serve to offset in whole or in part these extraordinary additions to their operating expenses and furnish some protection to their efficiency and credit."

The Webb Automatic Train Stop

An Automatic Stop Which Tests Its Own Integrity at Every Contact Point and Reports Audibly to Engineman

THE mechanical "double-action" automatic train-stop which has been under test on the New York, New Haven & Hartford for the past two years has now been brought to that degree of perfection where the proprietor feels sure of complete freedom from false clear failures, and he has sent to the *Railway Age Gazette* a photograph of the apparatus. From the engravings Figs. A and B, the reader can see the principle of the operation of the device. The present design is the result of experiments begun early in 1915. The trials on the road have been carried on between Derby, Conn., and Ansonia. Jean F. Webb, Jr., the inventor, made his first experiments with a dwarf "sema-

signal supervisor and the trainmaster have made numerous special reports. While the apparatus has been in the hands of the officers of the railroad company, changes in detail made by the proprietor have had to have the approval of the signal engineer of the road.

This stop is made by The International Signal Company, 104 West 42d Street, New York City, of which Jean F. Webb Sr., is president.

Fig. A is a view of the train-fixture box with its cover off. It shows the normal position of the parts of the mechanism after passing a ramp giving a clear indication. Fig. B shows the position of the parts while passing over a ramp giving the clear indication. Fig. C shows the train-fixture box just leaving the high point of a ramp giving a "clear" indication.

Fig. D shows the arrangement of connections where the train-fixture box is attached to the buffer beam of a locomotive, and Fig. E shows the wiring for the automatic train-stop in connection with a visual distant signal.

The apparatus operates at every contact point, without regard to whether the conditions require "stop" or "proceed." The plunger, 14, Fig. B, with the plunger-head 3 and the contact-shoe attached, in passing over the ramp, is pushed upward, and the projection 4, Fig. A, lifts the cam lug 2a, oscillates cam-shaft 1 and opens the air valve port which permits the brake-pipe air to escape to the atmosphere through the signal whistle.

If the ramp is energized, by reason of the controlling

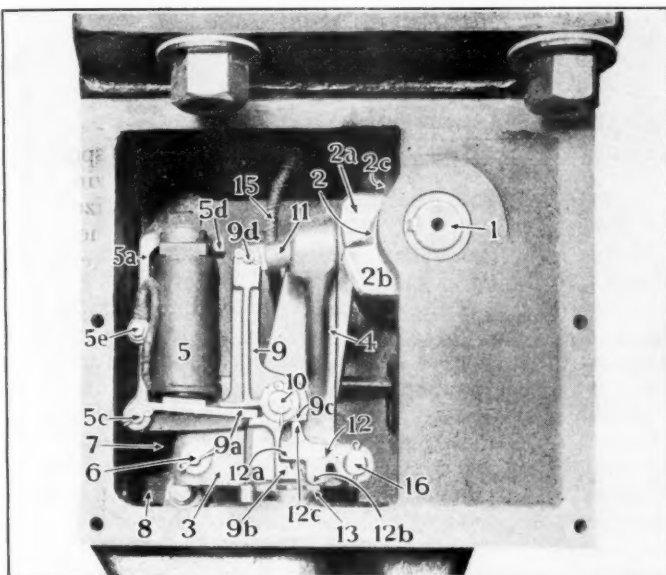


Fig. A—Webb Automatic Train Stop

phore," having an arm that swung around laterally as a tripping device; but he found that this arrangement was objectionable, as an obstruction on the roadway, and the tripping arm did not give satisfactory results at high speeds. His present design is of the "third rail" or "ramp" type, and he retains his "double action" feature; an audible signal, indicating "proceed," at each signaling point, when there is no occasion for stopping, and the actual operation of the brake applying mechanism at every movement over every ramp. When the road ahead is clear the brake pipe is opened for so short a time that the brakes are not set.

The apparatus was turned over to the railroad company in March, 1915, and the running tests have been made under the direction of the signal department of the road. One locomotive has been equipped and this engine makes three round trips with a passenger train each day over the section of road where the apparatus is installed. The principal apparatus is contained in a rectangular box about 1 foot square, fixed on the front end of the engine.

The apparatus has been operated regularly except during considerable periods when the locomotive had to be used in freight service, and other periods of considerable length when the apparatus was taken off and carried to the shop to have changes made in some minor details, or for repairs necessitated by damage done when the engine was on other parts of the road.

The engineman has made regular daily reports and the

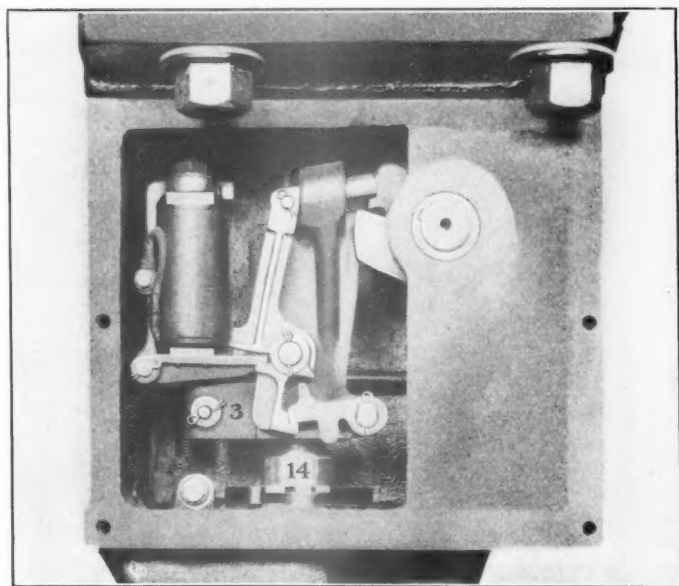


Fig. B—While Passing Over a Ramp

signal being in the proceed position, the electric current from the roadside battery, coming through the ramp, energizes the magnet 5, which, through its armature and bolt-lever 9, projects the bolt 11, so that, as the plunger is leaving the ramp, the bolt engages the main cam lug 2b, turning back cam shaft 1 and re-closing the opened air valve port before the reduction of brake pipe air pressure has been sufficient to start the triple valves into action; and consequently no brakes are applied. If, however, the ramp is not energized, as is the case when the controlling signal is set against the

train, or if there is a broken wire, exhausted battery, or any other breakage of the controlling circuit on the roadside, the magnet 5 is not energized and the bolt 11 is not projected, so that, as the plunger is leaving the ramp, there is no reverse oscillation of the cam shaft and no closing of the air valve port; and when a sufficient reduction of brake pipe air pressure has been made, the brakes stop the train.

The train-fixture box is attached to, but insulated from, the buffer-beam, in such a position that the bottom of the contact shoe is approximately $2\frac{1}{2}$ in. higher than the top of the running rail. The center of the contact shoe is outside of the gage line and can be fixed anywhere from 12 in. to 20 in. distant. A vertical movement of $\frac{1}{2}$ in. by the plunger, and the parts attached to it, is sufficient to open the air valve port, and any movement greater than that provides for lost motion and serves as a factor of safety.

The ramp, which is made of 36 lb. T iron, is approximately 34 ft. long with 22 ft. of contact. It is fastened to the ties so that the middle of its leg parallels the gage line at the same distance therefrom as the center of the contact shoe. Its slope at the point of contact is approximately $\frac{1}{4}$ in. to one foot.

The main cam shaft 1, which is journaled in the sides

plunger-head 3, is a bolt-lever 9 which has a recess 9a for co-operation with the end of the armature. The lower end of the bolt-lever 9 has a step 9b to co-operate with the pawl 12 in locking the bolt-lever in the bolt-projecting position; and its hub has a projection, 9c, which co-operates with the pawl 12 in effecting a mechanical retraction of the bolt 11 and locking the bolt lever in its normal position.

Bolt 11 is pivoted to the upper end of bolt-lever 9. This bolt slides in a cylindrical opening in the top part of the plunger-head 3, and, when projected, engages with the main cam lug 2b in a downward movement of the plunger (14),

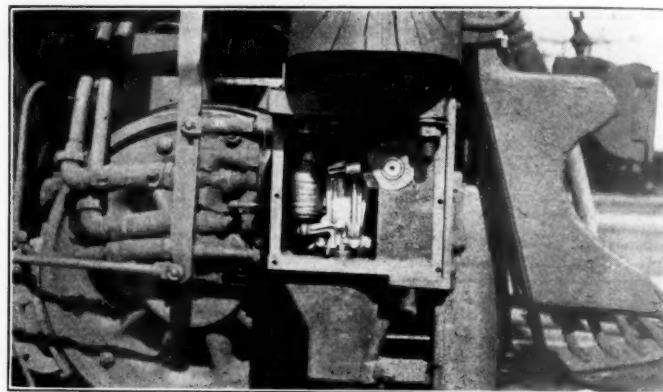


Fig. D—Webb Train Stop Attached to Locomotive

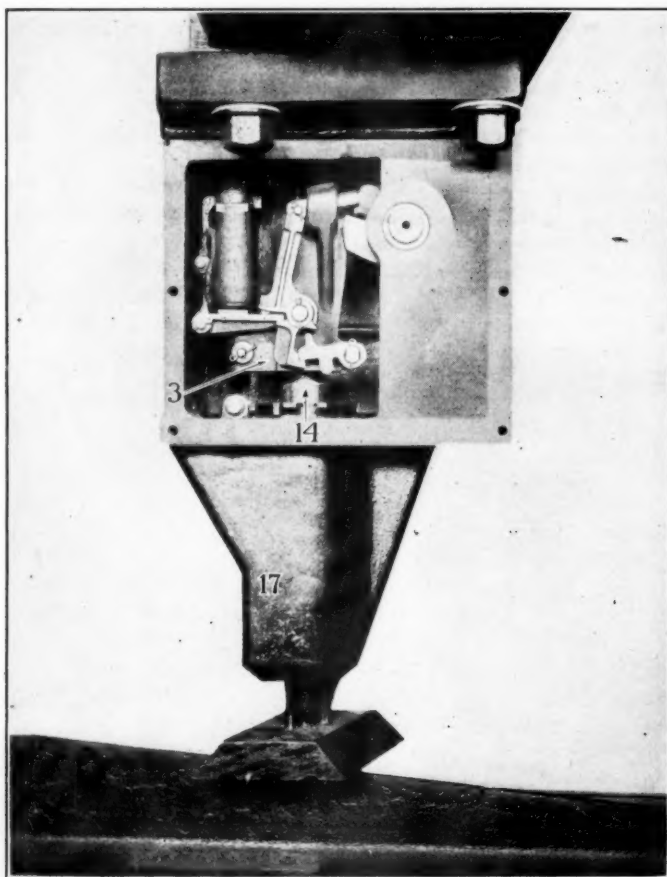


Fig. C—Shoe and Part of Ramp

of the box, carries the main cam inside of the box and also the valve cam inside of the valve housing. This main cam 2 has three lugs; 2a, the valve-opening lug; 2b, the valve-closing lug, and 2c, the valve-closing lug for manual re-closing.

Rigidly attached to the top of plunger 14 (Fig. B), is the plunger-head, 3, whose projection 4, on every upward movement of the plunger, engages with the main cam lug 2a, oscillates cam shaft 1, and opens the air valve port.

Pinned firmly in a socket in the plunger-head 3, is a bracket 5a which supports the electro-magnet 5 and, at 5c, its armature. Pivoted off-center on the stud 10 in the

effecting a reverse oscillation of the cam shaft 1 and a consequent re-closing of the port in the air valve.

Every passage of the plunger over the ramp, regardless of what the signal indication may be, raises the plunger (against the pressure of a heavy spring in the plunger-cylinder 17) (Fig. C) and opens the air valve, as above described.

If the signal indication is clear, a half-circuit, which includes a roadside battery (the same battery that works the signal) is closed to the ramp and to the running rail at the ramp location; and then, as the contact shoe passes over the ramp, the circuit is completed and the energy of the roadside battery enters the magnet 5 at binding post 5d, passes through both coils, through the connector spring 7 and the ground wire 8 to the engine frame and thence to the running rail. Thus energized, the magnet picks up its armature; and the end of the armature in bolt-lever recess 9a oscillates bolt-lever 9 and projects bolt 11 through the opening in the plunger-head 3. The point, 12a, of pawl 12 drops into the step 9b and locks the bolt-lever 9 in its bolt-projecting position, although the electrical contact may have been only for an instant; then as the plunger is sliding downward off the ramp, the projected bolt 11 engages the main cam lug 2a and oscillates the cam shaft in the opposite direction so that the open port of the air valve is reclosed.

As the downward movement of the plunger-head is nearly completed, the toe of pawl 12, which is pivoted at 16, engages the collar 13 (which acts as a guide for the plunger and a cover for the cylinder in which the plunger moves) and the step 9b is gradually released from the locking of pawl point 12a. After the step 9b is fully clear, the pawl lug 12c engages the bolt-lever hub projection 9c, and the completion of the downward movement of the plunger-head draws bolt 11 back, in spite of any possible residual magnetism or undue friction; and it locks bolt lever 9 in its normal position.

In all cases, the escaping brake pipe air is passed through a signal whistle in the cab, and the indication of the visual signal is there repeated to the engineman by the audible signal, a short blast being given if the signal is "clear" and a very long blast if the signal is caution.

The contact shoe is shown in Fig. C. It is attached to the plunger by three cap screws. The plowshare shaped

toe cuts cleanly through snow, ice and frozen mud, without lifting the plunger, and it has a corrugated bottom which scrapes the ramp clean. It has never failed to make an electrical contact. The shoe is made of cast iron, and a weakened portion, though strong enough for all normal work, plus a factor of safety, permits a breakage, at a predetermined point, upon contact with an unusual obstruction, such as a rock lodged between the ties, so that the remainder of the apparatus may not be harmed; and the plunger and shoe are hollow, and are connected by a hose (15, Fig. A) to the brake pipe, so that such a breakage will stop the train; and the replacing of a shoe is only a matter of a few minutes.

Mr. Webb is convinced that a false clear indication is impossible. The apparatus has never failed to respond to the position of the track relay which controls it or to the position of the distant signal; and except for an error by a maintainer in breaking contacts to produce an application of the brakes, no failure of any kind, mechanical or electrical, has been recorded or discovered.

A pilot plunger, not shown in the illustrations, is so fixed as to run a few inches ahead of the working plunger, to clear away any snow, sleet, mud, or other accumulated obstruction. This has proved effective in frozen snow and mud several inches thick. The apparatus has proved absolutely weatherproof. It works in precisely the same way whether the locomotive is running forward or backward. If the engine is used as the second one in a double headed train the entire apparatus is cut out by the turning of a four-way cock.

In connection with the tests of this stop, the engine has

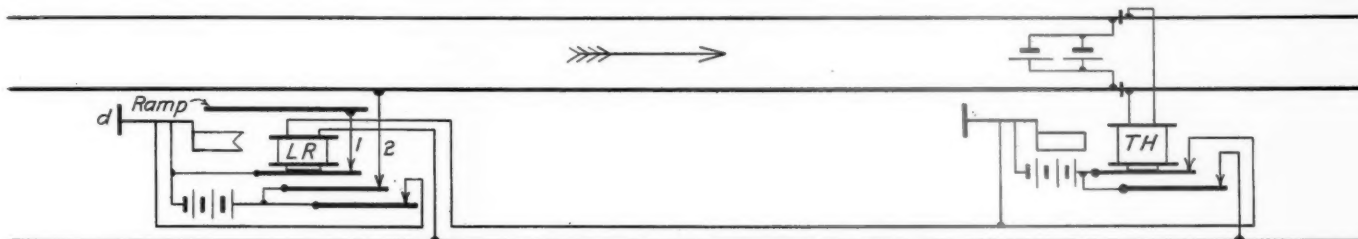


Fig. E—Electric Connection to Ramp—Webb Train Stop

been equipped with a governor, driven by a friction wheel pressing against the face of one of the driving wheels of the engine. This is used to prevent the engineman from releasing the brakes except when running below a prescribed rate of speed.

With the governor set at, say, 20 miles an hour, any movement of the locomotive at a rate above that figure locks the rod by which the engineman can release the brakes. By a recent improvement of this detail the governor acts on a pair of pistons in a chamber so as to prevent acceleration of the speed, beyond the predetermined rate, until a clear ramp has been reached. By means of the release rod (controlled by the speed-limiting governor as just stated) the engineman stops the exhaust of air in time to prevent too severe an application.

Fig. E shows the roadside circuits. When the distant signal, *d*, is cleared by the closing of the track relay, TH at the home signal the ramp circuit is closed through points 1 and 2. Then, on the passage of a train the circuit is completed from the battery to the ramp, to the magnet on the locomotive, to the frame of the locomotive, to the running rail of the track, to wire 2, and back to the battery.

RUSSIAN RAILWAY CONSTRUCTION.—The projected railways for construction during the period 1917-1922 comprise a total of 31,346 versts (20,779 miles), of which 2,000 versts (1,326 miles) are branch lines. The cost of constructing these lines is estimated at 600,000,000 rubles (\$309,000,000 at the normal exchange rate of \$0.515 to the ruble). —*Commerce Report.*

NEW RAILROAD LAWS

The legislature of Arkansas has passed a law applying only to a single county, requiring railways effectually to drain their roadbeds by construction of ditches or underdrains, where necessary, of sufficient width and capacity to carry off water. In incorporated towns underground tiling must be used. Another one, No. 191, to go into effect February 12, 1918, makes it unlawful under heavy penalties to operate an engine unless so constructed that the engineer and fireman are located under the same roof of engine cab; such roof to be not more than 14 ft. long and to extend entirely over deck or gangway of engine.

Indiana has amended section 673 of the Act of 1905, so as to require persons in charge of locomotives or interurban electric cars to sound whistle or gong at a distance of not over 100 or less than 80 rods before reaching a crossing at a public highway. Ordinances or by-laws of cities or towns not interfered with. This law is effective when the governor issues the necessary proclamation.

Kansas by Senate bill No. 249 requires railways to give written notice to grain shippers (intrastate) of all leaking or defective cars; and also give written notice within ten days thereafter of the time, place and extent of the repairs made while car was in transit. Penalty \$100 to \$500.

Senate bill No. 89, which applies only to streets leading to cemeteries owned by second-class cities having 7,000 inhabitants or more and an assessed valuation of \$4,000,000 or more, requires railroads to repave, remacadamize, sur-

face or resurface with vitrified brick and according to specifications of city engineer, the space between their tracks and for a distance of 18 in. outside of rails whenever such ways are recovered by city.

Senate bill No. 107, superseding a law of 1915, requires railways to furnish cars to shippers within a reasonable time without preference, etc., and according to a prescribed rule; for example, 10 cars or less within 3 days; more than 10 and less than 30 cars within 6 days; 30 cars or more within 10 days. In emergencies the Public Utilities Commission may require cars for specified products to be furnished within such reasonable time as it may prescribe.

Massachusetts has amended the law of 1906, which prescribes emergency tools to be carried on trains, by empowering the Public Service Commission to require the equipment of trains with other or additional tools.

Minnesota by House bill 395 authorizes cities of not less than 20,000 nor over 50,000 inhabitants, to prohibit or abate the emission of dense smoke.

Montana by House bill 38 requires the maintenance at stations of bulletin boards showing probable time of arrival of passenger trains. At stations having telephone connections with central exchanges, agents are required to supply exchanges with similar information about trains upon request. Penalty \$50 to \$200.

Senate bill No. 51 regulates the transportation of explosives (excepting where the Federal law applies). Vehicles while carrying explosives shall display upon an erect pole at front end a red flag bearing the word "DANGER;" or in lieu of flag the words "EXPLOSIVES DANGEROUS" printed or at-

tached to the ends and each side of the vehicle. Effective May 29, 1917.

New Hampshire by House bill 73 has adopted the name "Public Service Commission" for the name "Board of Railway Commissioners." Public Service Commission, upon petition, may permit the blowing of whistles and ringing of bells at crossings to begin at a greater or less distance than 80 rods. House bill 453 provides penalties for riding without right on an engine, tender, freight car, caboose, or other conveyance, not a part of a passenger train.

New Jersey.—The excess train crew law, heretofore referred to, is repealed, and the Public Utilities Commission is to prescribe the number of employees on trains; but the law prohibits any reduction, because of this act, in the size of any train crew, without authority of Public Utilities Commission. Effective July 4.

New Mexico.—House bill No. 24 requires railways to designate regular pay days, not more than sixteen days apart. Effective June 9, 1917.

Oklahoma.—House bill 490 prohibits removal by railways of their shops or division points which have been located at a point for five years or more without permission of corporation commission. If the commission finds that the sanitary or habitable conditions at the proposed new location would injuriously affect the health of employees or their families, it shall refuse permission to make such removal. The burden of proof that removal should be made will rest upon the railway.

Oregon.—After July 1, 1917, employers, excepting those engaged in interstate commerce, may deduct reasonable amounts from wages of employees for medical, surgical or hospital care, but upon complaint by an employee to the Industrial Accident Commission deductions thereafter must be made in such manner and in such amounts as the commission approves. Employers may contract with physicians to care for such employees, but the Industrial Accident Commission may cancel such contracts if it deems physicians selected incompetent; no such contract may extend more than one year without consent of commission. Each physician is required to report to the Industrial Accident Commission, January and July, the amount of funds received from employer in the preceding six months. Penalty for violation \$100 to \$500. Effective May 20.

House bill 342, supplementing a law of 1913, which requires railways to provide facilities for interchange of traffic, provides that a railway will not be required to interchange with another company, traffic originating at competitive points when the former company furnishes adequate service. Effective May 20.

An Oregon statute passed on February 17, to become effective on May 20, prohibits construction of new grade crossings at highways without permission of the Public Service Commission. The commission after hearing may refuse such permission. The commission without hearing may authorize the establishment of side tracks or industrial spurs across existing highways. Construction of highway crossings above or below grade is illegal without permission of the commission. The commission, after hearing, may require alteration, change in location or abolition of grade crossings and apportion expense. This law does not apply to cities of 100,000 or more. Another law, taking effect on the same date, makes it unlawful for persons knowing themselves to be afflicted with contagious disease to use any railroad car or public conveyance. Penalty \$25 to \$500, imprisonment for a period of from one to six months, or both.

South Carolina, by House bill 404, authorizes the railroad commissioners to make and promulgate reciprocal demurrage rules. Effective May 22.

Vermont, by a law going into effect June 1, provides that a passenger of a common carrier who publicly drinks in-

toxicating liquor as a beverage, shall be fined \$5. Effective June 1, 1917.

West Virginia by House bill No. 82 requires railways to provide, under heavy penalties, suitable space for transportation of sick and injured passengers traveling on cots or stretchers which are not more than 3 ft. wide and 6½ ft. long, no charge to be made other than the regular first class fare. Space in baggage car will be deemed suitable space. The law does not apply to persons whose illness is of such character as to be a menace to the public health. Effective May 23. Another law (Senate bill No. 62) requires railways to pay their employees twice a month. Penalty \$25 each violation. Agreements with employees to avoid compliance are null. Effective May 24.

Wyoming.—Senate bill No. 53 makes it illegal to ride on any part of a train except such portions as are specially fitted for use of passengers. Penalty \$5 to \$500, imprisonment 30 days to six months, or both. Conductors are made special constables. House bill No. 116 vests engineers and conductors with the powers of county sheriffs. Railways will be responsible for any unauthorized or negligent act of such employees in the exercise of powers so conferred.

HANDLING L. C. L. FREIGHT BY TRACTOR AND TRAILER TRUCKS*

Freight reaches the union freight station of the Chicago Junction from two sources. An average of 200 tons a day of outbound merchandise is delivered by wagons and motor trucks and more than 1,000 tons arrive in freight cars. This will be termed "trap car" freight. About 30 per cent of the entire tonnage is loaded for trunk line movement, and 70 per cent is placed in cars for other Chicago freight houses.

In making up the layout, we endeavor to distribute cars for Chicago transfer over the house, so that they may be easily available, thus reducing the trucking distances. It is not always practical, however, to distribute cars for trunk line movement in this manner. The layout is also arranged that trucks may be shoved into the setting from either the east or west platform, and consequently only a small proportion of the freight is trucked around the connecting runway at the north end of the house.

The house is "U" shaped. The east platform is 760 ft. long, 30 ft. wide where freight is received from street vehicles, and 20 ft. wide at the lower end. The west platform is 650 ft. long, 16 ft. wide, with posts down the center, and is connected with the east platform by a 10-ft. uncovered runway. There are 12 tracks giving space for 188 cars. Tracks No. 1 to No. 5 and the spur are set with empty cars, and tracks No. 6 to No. 11 carry loaded cars.

When a motor truck or wagon arrives at the receiving door it is taken in charge by a checker and caller, the latter assisting the teamster in unloading. All merchandise is loaded direct from wagon to four-wheel hand trucks with the exception of very heavy boxes and barrels, which are placed on two-wheel trucks. We make it a practice never to pile freight on any platform, but keep it on wheels from the time it arrives in a wagon or freight car until it is stored away for shipment. This method eliminates extra handling, relieves the congestion because the freight can be easily shifted from one spot to another, and reduces the cost.

The checker directs the distribution of the packages to the four-wheel trucks, each of which is destined for a different freight car. A chalk mark placed on the parcels indicates their destination, and the trucks, which are equipped with cross-chain couplings, are shoved to one side to await the arrival of one of our electric tractors.

We try to give these trailer trucks the best loading pos-

* An appendix to the report of the Yards and Terminals committee of the American Railway Engineering Association presented at the annual convention, Chicago, March 20-22, 1917.

sible, sometimes holding them for a short while to receive freight from another wagon; but, whether they have a full load or not, there is no extended delay in turning them over to a tractor. This machine, in charge of a motorman and a helper, couples up to any number of these trucks, which have been made up into station order according to the layout of the house, and hauls them down the platform. Without the train being stopped, the helper cuts off the trailers in front of the run in which their respective freight cars are located. Three laborers work up and down the house and assist the stevedores or stowers in pushing these loaded trailer trucks into the cars. The stevedore does all the unloading, watches the marks for errors, and pushes the empty truck outside his run, where it is again available for loading.

The cars are assigned to gangs, consisting of a checker, caller and two truckers. Outside of each car is stationed a reasonable supply of four-wheel hand trucks and several two-wheel trucks, depending entirely upon the kind of merchandise to be handled. Each of the four-wheel trucks is destined for a particular freight car, and the checker directs the distribution of the merchandise as it appears.

Shipments going into cars only a very short distance away are handled on two-wheel trucks, but everything else is placed entirely on the four-wheel trucks, some of which are frequently pushed inside the car to receive their load. The caller marks the parcels with a block number and is assisted in loading them on the trucks. When a truck is fully loaded, or when no more freight appears for that particular block destination, it is pushed to one side and later added to the tractor-trailer trains. These trailers are distributed and handled precisely as described in team freight.

Eventually it is hoped to eliminate two-wheel hand trucks entirely. At the present time 160 four-wheel trucks are used, all of which are fitted with cross-chain couplings, so that they may be made up into trains to be hauled by the tractors, and only 150 two-wheel trucks. The cost of loading and unloading a four-wheel truck is a trifle higher than for a two-wheel truck, but the economy in moving them with an electric tractor wipes out that item entirely and leaves a surplus.

The use of four-wheel trucks is advantageous and economical because of their increased carrying capacity. On the average it would require five two-wheel hand trucks to carry the load we place on a single four-wheel truck. The average train hauled by a tractor consists of seven of these trucks, which means that on every average trip we transport as much freight as would be possible with 35 two-wheel hand trucks.

This is not all saving, however, as the cost of the tractor, motorman, helper, and the three laborers who assist the stevedore in pushing the loaded trucks into the freight cars must be deducted; but having deducted these costs we have been able to save about 30 per cent of the cost of trucking since installing the tractor-trailer method.

November, 1914, was the first month we were really working the system under full headway, and the decrease in trucking costs was 4.07 cents per ton, as compared with November, 1913. We handled in November, 1914, 25,133 tons of freight, thus making a total saving of \$1,022.91 in that month. There has been practically no saving in the cost of checkers, callers or stevedores, nor has this cost increased.

The checkers receive	\$75 per month.
Callers receive	23½ cents per hour.
Truckers receive	22 cents per hour.
Stevedores receive	23 cents per hour.
The three laborers receive (above referred to).....	22 cents per hour.
The motormen receive	23½ cents per hour.
The motormen's helpers receive.....	22 cents per hour.

We use two electric tractors, each of which hauls up to 20 four-wheel trucks in trains. The first one was purchased in August, 1914, and the second in January, 1915. Eventually we expect to use at least four more machines of this type. Their use over any distance above 100 ft. is economical, as rendering unnecessary the service of men for pushing hand trucks.

The house is not designed for the use of tractors and trailers. The west platform is only 16 ft. wide, with posts down the center and one approach to the connecting runway is a right-angle turn through a 5-ft. passageway. The cross-chain hitch enables us to negotiate this turn without any difficulty, and our method of operating on the narrow platform is to require that all trucks, whether loaded or empty, be kept standing on the west runway, thus leaving the east side free for tractor movement.

It must also be remembered that the layout of our house does away with practically all of the long trucking distances. As explained, 70 per cent of our freight is loaded into cars going to other Chicago houses, and these cars are scattered over the set-up. The average trucking distance will not exceed 250 ft. It will readily be seen, therefore, that the tractors are working under a severe handicap, and even greater economy over hand trucking could be effected if the distances were longer.

Then we have another local condition at noon when we are compelled to handle about 20 cars of perishable freight in approximately one hour. While we are doing this we are forced to forget all about economy—speed and correct distribution of freight being paramount issues. During this period we work a number of two-wheel trucks because we can accomplish the transfer in less time, although the cost is almost prohibitive when compared with tractor-trailer methods.

It is our opinion that tractor-trailer methods of handling freight will reduce the cost of trucking in almost any house unless local conditions are particularly unfavorable. The methods as above described must, of course, be varied and new methods devised to meet conditions peculiar to each freight house.

GERMANY'S RAILWAY DIFFICULTIES.—Although it is wise to allow a considerable discount off accounts of very adverse economic conditions in Germany, evidence has accumulated within recent weeks which seems to show that the much-vaunted organization of the German State railways has badly broken down. One neutral observer whose impressions have been much quoted asserts that "the whole German railway system is badly disorganized by the shortage of coal"—due mainly to lack of labor in the collieries and the demands of the munitions. Side by side with this condition we find official "explanations" of the shortage and dearness of coal and food in Berlin and other large cities, ascribing the cause to lack of sufficient railway facilities. In this connection it is significant to note a statement that as much as 23 per cent of the total German rolling stock is immobilized for a variety of reasons. Add to this that military exigencies require the stock to be used on a system now extending from Belgium to Roumania, and the German transport difficulties and shortage of facilities are to a large extent explained. According to the usually well-informed *Gazette de Lausanne*, these conditions point to the existence in Germany of a transport crisis, which is more likely to be aggravated than to show an improvement. As a matter of fact, this crisis has for some time past been admitted by enemy technical and commercial journals. A recent report shows that in Silesia only 20 per cent of the freight cars required are available, and water transport has not relieved the situation owing to the lack of carts to convey merchandise to the barges. All this has reacted on the output of munitions. The freight car shortage is the direct outcome of the policy pursued by the Government for years before the war, although the traders had continually urged that larger orders should be given out. Large orders were actually given in 1915, but it has been stated that labor conditions have until now prevented the delivery of more than 15 per cent of the vehicles ordered.—*Railway Gazette, London.*

ARGUMENTS IN TRANSCONTINENTAL RATE CASE

The transcontinental rate case, involving the entire question of the adjustment of rates to the Pacific Coast and to the intermountain territory, is again before the Interstate Commerce Commission for decision. Two full days were allotted by the commission for arguments last week, Wednesday and Thursday, on the tentative report submitted by Examiner-Attorney Thurtell after a series of hearings concluded in December. The Thurtell report, while recognizing the necessity for adjusting rates to the Pacific Coast to the conditions of water transportation in the future when normal conditions have been restored, finds that there is so little water competition at present via the Panama Canal that it is a negligible factor as affecting rates by rail between Atlantic and Pacific terminals. He also suggested the readjustment of the rates to intermediate points.

The railroads, while concurring in general with most of his recommendations for future treatment of the rates, disagreed most emphatically with his conclusion that rates to the Pacific Coast should now be raised without reference to water competition and in this they were supported by the representatives of the Pacific and Atlantic seaboard shippers, while the representatives of the intermountain communities argued strongly that potential competition should not be taken into consideration and that the rates to the Pacific Coast should be made without reference to the possibility of a resumption of water traffic. Both the representatives of the railroads and of the shippers had many criticisms to make of the percentage bases for adjusting rates to the intermountain territory suggested by Mr. Thurtell, which the railroads contended were improperly made, on the ground that the reasonableness of the intermediate rates is not at issue in this case.

The principal contentions of the roads were indicated in extracts from the brief filed by the attorneys for the transcontinental railroads published in last week's issue. Fred H. Wood, commerce counsel of the Southern Pacific, in opening the argument for the carriers, said that when the commission reopened the transcontinental case last fall for reconsideration, the carriers had tried to approach the situation in a constructive way and to reach a final solution of the basis on which transcontinental rates should be made hereafter. They had attempted to deduce from the mass of testimony already before the commission certain conclusions from which they hoped the final solution might be deduced and the views of the carriers had been crystallized in a set of proposed rules for the construction of transcontinental rates outlined by L. J. Spence, director of traffic of the Southern Pacific, at the Chicago hearing.

Under this set of rules the carriers would be required to show that proposed rates to or from the coast terminals are made necessary by conditions not created by the carriers and are less than reasonable rates; that they yield revenue in excess of the out-of-pocket cost and that relief should be granted to meet both actual and potential sea competition; that rates between interior points of origin and the Pacific Coast should be such as to enable the carriers to participate in the traffic and the commission should from time to time determine the extent of relief from the fourth section based on the actual conditions. The intermediate rates should not be disturbed except as they may be affected by combination on the coast rates, but should be based on the principles of inherent reasonableness.

Mr. Wood pointed out that these rules require of the carriers a precision of proof never before required of them in these cases, placing on them the obligation to show not merely that there is water competition, but that the commodities on which relief is asked are actually susceptible to water competition. These increased requirements, he said,

created a great difference between the plan now proposed by the carriers and the plan under which transcontinental rates were formerly made. It not only divorced the intermediate rates from the terminal rates, but gave the commission power to control the situation by determining the exact measure of fourth section relief to be allowed at terminal points while it has power at all times to protect the intermediate points from unreasonable or discriminatory rates. He declared that the testimony shows that the general body of rates to intermediate points is already reasonably low and the rules proposed by the carriers as to terminal rates follow the rules laid down by the commission itself in the southeastern fourth section case. Mr. Wood said that the principal objection on the part of the carriers to the Thurtell report is to his position that intermediate rates are not now reasonably low and that water competition should be disregarded for the present, although it recognizes the fact that the water competition is certain to return.

Charles Donnelly, assistant general counsel of the Northern Pacific, argued that if potential water competition is to be disregarded and fourth section relief is to be denied as to the terminal rates, the other findings of the examiner's report making suggestions for the readjustment of the intermediate rates are wholly outside of the issues, because, he said, whatever may be the power of the commission in connection with a grant of fourth section relief it has none whatever in connection with a denial of such relief. While recognizing that the commission is powerless on the record before it to require these changes, he said, the report goes on to suggest them and to outline a plan involving the complete overthrow of the present transcontinental rate structure and the substitution of an entirely new one and the plan proposed amounts to an invitation to interested communities to file the necessary complaints and to an assurance that upon the filing of such complaints rates will be made in accordance with the plan.

Mr. Donnelly declared that it is no extravagance to say that the most sweeping change ever contemplated by the commission is here proposed upon a record containing not a word of testimony as to the effect the change will have upon the carriers and communities to be affected by it.

H. A. Scandrett, interstate commerce attorney of the Northern Pacific, in his argument discussed the detailed rate questions raised by the report.

Seth Mann, representing the San Francisco Chamber of Commerce and appearing also on behalf of the attorney general of California, argued for the continued recognition of water competition as the normal condition affecting coast rates in spite of the temporary abatement of water traffic, pointing out that the business of the coast has been developed under its influence and would suffer severely if, in addition to the withdrawal of water service, it should also have to stand an advance in rail rates. He thought that within six months regular service through the Panama Canal would be restored and insisted that the proposed readjustment of the rate structure would be ruinous to the coast, while giving little benefit to the intermediate territory. S. J. Wetrick of Seattle took a similar position, saying the benefit to be derived by the intermediate cities by an advance in rates to the Pacific Coast would not approach the amount of injury which it would place upon the coast cities. C. T. Helping, representing San Diego, San Pedro, Los Angeles and Southern California, predicted that water competition would soon return and argued against disturbing the present situation because of temporary conditions.

J. B. Campbell, representing Spokane, made the opening argument on behalf of the intermountain interests. He ridiculed the idea of potential competition, saying that the railroads now have no competition which exerts a controlling influence and that, in fact, they are unable to handle all the traffic that is offered to them. S. H. Love, representing Salt

Lake City, also supported the Thurtell report, saying it was admitted that there is not now and has not been for many months any effective water competition in coast to coast traffic and contended that if the rates to the Pacific Coast are sufficient to pay the out of pocket cost and something over they must be fully remunerative when applied to the shorter distance to Utah. A. L. Freehafer, of the Idaho Public Utilities Commission, ridiculed the idea of potential water competition. He said he hesitated to agree with the idea of divorcing the intermediate rates from the terminal rates on the ground that such a plan would be discriminatory against the intermediate communities and he also objected to the examiner's suggestion that the rate to Boise should be 90 per cent of the rate from the Missouri River to the coast. He suggested 80 per cent as reasonable.

F. M. Hill, representing Fresno, Calif., and other interior California cities, urged that they be placed on an equality with the Pacific Coast, predicting that when water competition returns the railroads would be willing to continue the arrangement in order to protect the business which would be developed in the interior communities. He said the old plan of making transcontinental rates had not worked satisfactorily and he was strongly in favor of trying the Thurtell plan.

F. A. Jones, chairman of the Arizona Commission, supported the Thurtell report, objecting to what seemed to him the inconsistency of the railroads in their unwillingness to take more revenue on traffic handled on rates which they now declare are less than reasonable when they are urging a general advance in rates. He urged that the commission ascertain what would be reasonable rates to the Pacific Coast and graduate them for the lesser distances, making such readjustments as may appear necessary when conditions as to water competition change.

H. F. Bartine, chairman of the Nevada Railroad Commission, charged that the railroads are attempting to destroy the influence of the Panama Canal. He said the canal serves only through business while the railroads may pick up traffic all along their lines and that they should not be allowed to discriminate between intermediate points for the purpose of destroying canal competition. He argued that no one can tell when water competition will return and that as there has never been any argument for a differential against the intermediate points except the existence of water competition, the commission should now wipe out the differential, which, he said, would solve the main problem, and stop there.

M. W. Maxwell, of Denver, agreed in the main with the findings of the examiner, but thought there was too little spread between the rates to Denver and those to Utah in his suggested readjustment. H. C. Barlow, representing the Chicago Association of Commerce, argued that the examiner's findings are fundamentally sound in asking the commission to consider conditions as they exist to-day and that it affords a basis for a final solution of the problem. He hoped it would result in destroying the blanket rate system which has prevailed in the West and said the proposal of the railroads was essentially the same as that of J. C. Stubbs 25 years ago. C. L. Lingo, representing the Inland Steel Company, asked the commission to preserve the differential of 10 cents in iron and steel rates from Chicago as compared with those from Pittsburgh. Martin Van Persyn, representing Sprague, Warner & Co., of Chicago, approved the tentative report as a sane, constructive suggestion.

J. C. Lincoln, representing the Merchants' Association of New York, was the first speaker on behalf of the Eastern cities. He agreed with the railroads in contending that the fourth section relief should be denied on traffic from the Atlantic to the Pacific Coast, saying that business has been built up under the present rates and that this is no time to add further burdens to commerce in order to meet a temporary condition when water competition is the normal

condition to be expected. The traffic manager of the United States Rubber Company, which, he said, does a business of \$20,000,000 a year to the Pacific Coast and pays \$2,000,000 a year in freight charges to the railroads, asked that the commission leave both the rail and water routes available, saying that if no relief were granted to the railroads the boat lines would get all of the business as soon as they return to the traffic and that some efforts are now being made to re-establish regular service.

M. L. Moon, representing iron and steel interests east of Pittsburgh, objected to any lower rate on those articles being granted to Pittsburgh or Chicago than to the points east of Pittsburgh. W. Wood, representing iron and steel interests at Birmingham, Ala., concurred with the carriers in urging the recognition of effective potential water competition and he urged the importance of preserving the stability of rates, saying that any increase from the Birmingham district to the Pacific Coast at the present time would have a very serious effect.

Frank Lyon, representing the American-Hawaiian and Luckenbach steamship companies, said that the commission is not now called upon to express any opinion as to what may happen as to water transportation in the future and he urged the commission to recognize the importance of building up the merchant marine instead of sacrificing it on the altar of the railroads. He declared that the railroads have persuaded the commission largely to nullify the purpose of Congress in passing the amended long and short haul clause and said that the railroads are now trying to forestall the boat lines. Chairman Hall, of the commission, asked if he thought the fact that the railroads are continuing to serve the public in the transcontinental traffic while the steamship lines are not, made any difference. Mr. Lyon said that the carriers are only performing their legal duty, while his clients were exercising their legal rights. He said he saw no reason why the commission should not allow the railroads to secure all the traffic if it is to allow them to keep a part of it at less than reasonable rates, and he pointed to what he called the inconsistency of the carriers in objecting to this opportunity to collect \$10,000,000 or \$15,000,000 of additional revenue by establishing reasonable rates from coast to coast.

In closing the argument, Mr. Scandrett said that the boat lines are not in the case because of any interest in whether the intermediate rates are high or low. Their only interest is to force the rail lines to raise the coast rates so that when the ocean rates and the business in which the steamship lines are now engaged become less lucrative they can return to the canal traffic and meet a higher scale of rail rates, thereby getting more money out of that traffic whenever they find it profitable to return to it. Mr. Wood said that the only points made by the intermountain shippers in their arguments had been that water competition now was merely potential and that the carriers were seeking to restore the plan of making what rates they please to the Pacific Coast. Regarding the first argument, he said that Mr. Lyon's argument was a better argument for the existence of potential competition than he could make and that Mr. Lyon's very presence in the case was the living and breathing evidence of potential competition. Regarding the second argument, he said the carriers had offered to sustain their rates to the Pacific Coast by proof not only of competition, but as to the extent of relief which should be granted and had proposed that if the rates proposed by the carriers were not considered proper by the commission that it should itself determine the amount of relief to be granted. He replied to Mr. Campbell's argument that there is no competition because the railroads have more business than they can handle, by saying that on that principle all fourth section orders of the commission in all parts of the country should be withdrawn whenever there is a temporary car shortage.

General News Department

The Pennsylvania Railroad announces to employees that they may use unoccupied land of the company for cultivating food crops this summer.

A press despatch from Lockhart, Tex., April 3 reports the destruction by fire, within ten days, of three bridges on the line of the Southern Pacific between Houston and San Antonio.

The Chesapeake & Ohio hospital at Clifton Forge, Va., has moved into a new and well equipped building, which was dedicated April 2. An address was made by President George W. Stevens.

The Baltimore & Ohio, the Pennsylvania and the Western Maryland have combined to provide a hospital train for the use, when needed, of Maryland soldiers. The train is being fitted up at the shops of the Western Maryland.

At Martinsburg, W. Va., April 3, two train robbers pleaded guilty and were sentenced to imprisonment of 25 years and 10 years respectively. They were members of a gang which robbed a train of the Baltimore & Ohio in West Virginia on October 8, 1915.

The meeting of the western division of the Association of Railway Telegraph Superintendents, announced in these columns last week for April 18, has been postponed one day. The meeting will convene at the La Salle hotel, Chicago, at 10 a. m., on April 19.

The Norfolk & Western has notified employees that any of them leaving the road to enlist in the state or federal military service will have paid to them by the company, for six months at least, a sum sufficient to make each man's pay equal to that which he has earned on the road.

The principal railroads of the state of Pennsylvania have renewed their memorial to the legislature of the state, addressing it also to the people and the public generally, calling for the repeal of the "full-crew" law of that state. Attention is called to the action of New Jersey which has passed a law designed to correct the unjust features of the law of that state.

Needless Luxuries

Now that our country has entered upon the great adventure of foreign war, public and private life ought, unquestionably, to be so reorganized as to realize the utmost economies of effort and expenditure. Is there any one who doubts that a considerable saving of men and money could be effected by the abandonment of Governmental activities that have, during recent decades, greatly added to the burdens of the taxpayers without producing adequate benefits to any?

Why not, for example, suspend for the period of the war the popular legislative pastime of investigation? And why not let the suspension extend to all varieties of commissions? * * * For three or four years, the Interstate Commerce Commission has been making a so-called "valuation" of railroad property, which it originally promised to make for less than \$1,500,000 and to finish within less than two years (though Col. Roosevelt, then President, said that even that cost would be "enormous," as compared with the possible utility of the results.) This work now absorbs the time of several thousand men (including railway employees) and costs the Government over \$3,000,000 and the railways over \$5,000,000 each year. If nothing is done, the yearly expense will increase and the work will continue for another ten years. Then, should it be completed, it will suddenly be discovered that the results are worthless because, to give one reason among many, they relate to the utterly obsolete price-level of the ante-bellum period. Why not put an end, at least for the war, to this preposterous superfluity?

The need of men for productive industry, as well as for the fighting line, is pressing and will become more pressing. The burdens of taxation are about to be vastly and permanently augmented.—H. T. Newcomb, in the *New York Evening Post*.

New Demurrage Rates Proposed

The railways, through the A. R. A. Committee on Relations between Railroads have filed a request with the Interstate Commerce Commission to be allowed to put into effect on May 1 (on less than statutory notice) amendments to the demurrage rules 7 and 9 providing for a demurrage rate of \$2 per car per day for the first five days after free time and \$5 a day thereafter. On behalf of the National Industrial Traffic League, which has just taken a letter ballot on the proposed new rates, F. B. Montgomery, chairman of its demurrage committee, concurred in the request to the commission.

The Interstate Commerce Commission has modified its order of February 12 regarding the taking of additional testimony on the protest of the Atlanta, Birmingham & Atlantic against the commission's tentative valuation of its property, so as to permit the taking of further testimony before an examiner on all subjects pertaining to the valuation. The commission also announces that the taking of testimony in the Texas Midland case will be resumed on April 16 at Terrell, Tex., before Examiner John H. Gray, who is authorized to continue the taking of testimony at such other times and places as may seem proper, upon all issues raised by the protest.

Western Roads Assign Reasons for Rate Increase

In a statement sent to newspapers of Illinois on April 6, the Illinois Railroad Committee gives in substance the petition of the railroads operating in western classification territory filed with the Interstate Commerce Commission on April 2, in an application for a general advance in freight rates. The petition of the western carriers points out that they are in need of an advance in freight rates to enable them to meet the financial outlay incident to the observance of the Adamson law, and incident to other greatly increased operating costs, increased cost of equipment and capital, increased taxes, and to meet the demands of the general commerce of the country, and the additional obligations that are arising in connection with the plans for national defense. The statement explains in detail how these various factors have greatly increased the burdens borne by the transportation system of the country, and how highly important an advance in rates is to the railroads and the country at large.

In order to provide sufficient equipment and adequate facilities to handle the tremendous traffic, which has developed since the opening of the European war and which is being augmented by military traffic, the railroads must have more revenue and that quickly. Under present conditions all rail carriers, including those in the best financial condition, find it necessary to borrow at high rates of interest, and in the future will find it necessary to pay higher premiums for capital unless they receive assistance in the way of increased rates. The percentages of increase deemed necessary to meet the new burdens on the different roads vary according to the prosperity or lack of prosperity of the individual carriers. Few of the roads were prosperous before these new conditions arose, and a lesser number of them will probably continue to be prosperous under present conditions. The great majority, however, cannot prosper under present conditions.

The carriers recognize that the status of neither the weakest road nor the strongest is to be considered as affording a standard by which to determine the proper percentage of the general advance, but in considering the position of all roads as a whole it is thought that an increase of 15 per cent on the average will be necessary, although no percentage of increase has been specifically asked in the petition filed with the commission. In case an advance is granted it lies with the commission to determine whether a maximum percentage of increase should be fixed, or whether the advance should be allowed in the form of specific increases. If the uniform maximum percentage of increase is allowed, it is the intention of the carriers to maintain or preserve such relationships as are necessary to avoid discrimination, and to maintain fair industrial and commercial competition.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF FEBRUARY, 1917

Name of road.	Average mileage operated during period.	Operating revenues.			Maintenance of way and structures.		Operating expenses.			Net from railway operation.	Railway tax accruals.	Operating income (or decr.) (or loss).	Increase (or decrease) last year.
		Freight.	Passenger.	Total (inc. misc.).	Way and structures.	Equip.	Traffic.	Transportation.	Miscellaneous.				
Alabama & Vicksburg.....	143	\$110,540	\$31,474	\$155,981	\$22,600	\$23,436	\$5,632	\$52,844	\$2,430	\$114,570	\$9,700	\$31,710	\$4,595
Alabama Great Southern.....	312	295,557	130,313	448,337	63,210	101,310	16,060	155,438	2,981	350,260	19,512	78,224	59,124
Ann Arbor.....	294	127,515	17,425	164,384	38,474	38,474	5,652	106,124	361	138,859	13,700	41,446	57,870
Atlanta, Birmingham & Atlantic.....	640	241,715	39,489	304,221	33,863	47,834	15,421	129,902	35	238,948	13,000	51,667	21,691
Baltimore & Ohio.....	4,545	6,770,396	1,086,656	8,665,656	871,747	1,795,961	204,275	3,678,726	61,234	6,841,466	336,948	1,486,855	126,839
Bingham & Garfield.....	36	205,079	5,804	210,883	18,993	23,140	1,061	35,134	106	82,387	130,210	2,848	34,030
Canadian Pacific Lines in Maine.....	234	241,522	13,481	265,381	21,112	32,711	5,626	118,390	5,527	183,096	80,285	74,785	18,838
Central of New Jersey.....	684	1,865,071	432,965	2,298,036	193,106	514,153	26,855	1,065,324	18,247	1,884,183	644,949	499,328	117,051
Central New England.....	301	265,451	26,357	311,921	63,177	47,050	6,969	150,329	2,241	268,986	42,936	25,929	120,492
Central Vermont.....	411	155,154	63,360	218,514	37,461	52,002	6,564	154,126	2,241	263,211	11,784	27,469	89,574
Cheapeake & Ohio Lines.....	2,381	2,996,842	431,344	3,679,250	484,382	753,562	57,787	1,341,200	32,838	88,627	2,757,204	787,408	209,552
Chicago & Erie.....	270	451,890	37,920	489,810	54,056	73,507	18,580	309,792	3,272	483,808	48,891	27,616	21,311
Chicago, Burlington & Quincy.....	9,373	6,232,620	1,555,223	8,392,703	588,125	1,380,693	114,580	3,071,502	103,874	199,870	5,458,644	421,674	355,794
Chicago, Indianapolis & Louisville.....	654	430,684	134,193	564,877	52,973	119,719	19,786	255,775	369	466,425	149,296	118,935	39,583
Chicago, Milwaukee & St. Paul.....	10,230	4,396,620	1,203,917	6,514,625	713,156	1,504,522	154,228	3,597,367	57,483	171,231	6,209,115	458,697	1,614,277
Chicago, Rock Island & Pacific.....	7,656	3,986,826	1,460,637	5,949,978	779,975	1,214,353	136,894	2,707,608	42,135	160,088	5,010,129	320,670	618,785
Cincinnati, Hamilton & Dayton.....	622	544,016	90,858	634,874	94,110	168,906	14,857	374,822	2,999	671,239	43,931	10,521	89,102
Cincinnati, Indianapolis & Western.....	322	155,036	37,715	192,751	16,341	31,593	6,650	94,081	474	7,489	9,166	46,573	22,077
Cincinnati, New Orleans & Texas Pacific.....	337	580,206	214,144	855,042	91,167	208,338	25,823	304,759	7,705	19,665	557,585	37,000	160,579
Cripple Creek & Colorado Springs.....	87	90,099	11,112	101,211	12,998	9,245	1,398	24,232	.....	50,812	52,177	49,177	2,856
Delaware & Hudson Co.—R. Dept.....	886	1,471,783	186,050	1,762,706	186,636	475,226	23,485	794,387	17,509	79,865	1,578,878	62,590	121,237
Denver & Rio Grande.....	2,578	1,351,143	250,408	1,799,277	165,810	371,895	37,558	629,227	24,573	1,296,367	442,910	352,871	211,426
Denver & Salt Lake.....	255	1,091,977	121,109	1,213,086	24,462	44,442	1,664	73,034	.....	5,269	151,352	8,250	41,028
Detroit & St. Louis.....	81	139,615	11,007	150,622	18,382	6,568	9,568	43,076	.....	3,020	64,171	6,307	70,109
Detroit & Toledo Shore Line.....	441	159,822	11,007	170,829	18,382	22,500	3,907	43,076	.....	7,733	189,460	8,000	15,124
Detroit, Toledo & Ironton.....	441	159,822	11,007	170,829	18,382	22,500	3,907	43,076	.....	7,733	189,460	8,000	15,124
Duluth, South Shore & Atlantic.....	600	182,348	61,194	243,542	36,934	41,995	3,840	141,773	.....	8,718	217,346	18,000	25,380
Duluth, Winnipeg & Pacific.....	191	167,661	26,734	194,395	9,098	21,532	8,108	118,423	3,168	121,734	43,380	25,380	11,845
Erie.....	1,988	3,298,590	653,793	4,452,383	446,212	1,316,935	96,595	2,517,657	34,797	7,006	4,520,333	224,485	299,965
Florida East Coast.....	765	321,962	440,042	761,004	886,386	71,968	10,477	200,176	7,124	15,885	365,999	38,214	482,549
Fort Worth & Denver City.....	454	324,591	101,413	426,004	48,966	72,777	6,517	200,176	2,478	17,214	285,550	166,520	149,458
Georgia Southern & Florida.....	402	134,105	66,785	200,890	29,484	40,589	7,297	83,109	189	9,606	170,274	12,121	48,577
Grand Canyon.....	64	418	24,407	24,825	1,348	17,595	674	17,595	.....	190	32,751	1,463	6,771
Great Northern.....	8,198	3,412,125	957,137	4,369,262	689,303	963,130	119,732	2,114,101	78,857	122,495	4,070,381	432,662	419,932
Gulf, Colorado & Santa Fe.....	1,938	872,309	207,118	1,154,556	224,999	187,578	26,442	437,554	.....	51,191	925,723	59,483	169,162
Hocking Valley.....	350	508,211	63,361	600,632	58,276	146,671	8,110	231,428	.....	15,518	460,003	49,000	91,245
Kan. City, Mex. & Orient Ry. Co. of Tex.....	466	75,314	14,493	89,807	21,179	26,024	4,156	53,798	.....	4,230	109,387	13,950	23,592
Gulf, Mobile & Northern R. Co.....	402	121,426	23,645	145,071	21,339	25,457	4,884	51,680	.....	7	109,947	44,637	4,338
Louisiana & Arkansas.....	302	77,487	15,712	93,199	22,183	18,090	3,680	33,619	.....	4,642	18,430	15,835	10,145
Michigan Central.....	1,862	2,272,681	777,835	3,450,516	397,935	616,813	60,536	1,934,922	61,414	79,337	3,170,962	156,000	122,691
Midland Valley.....	385	153,237	42,036	195,273	41,942	31,481	2,696	66,662	.....	8,452	151,233	5,138	46,787
Mineral Range.....	120	86,159	2,459	88,618	19,083	18,283	399	51,375	.....	1,012	90,152	465	2,605
Missouri & North Arkansas.....	365	74,966	28,702	103,668	18,199	14,401	3,685	41,483	.....	5,061	82,828	4,800	23,523
Missouri, Oklahoma & Gulf.....	334	125,409	18,891	144,300	18,667	25,226	429	71,722	429	7,334	128,434	7,301	14,829
Missouri, Oklahoma & Gulf of Texas.....	134	22,632	373	22,995	3,113	2,530	1,812	10,926	.....	11,789	20,171	184	2,930
Missouri Pacific.....	3,915	1,945,565	362,995	2,523,690	365,792	417,454	64,526	1,081,834	7,732	60,481	1,992,586	114,000	416,704
Nevada Northern.....	165	153,143	11,250	164,393	14,910	15,896	793	31,264	89	67,428	100,768	8,000	92,768
New York Central Railroad.....	6,083	9,134,237	3,688,045	15,065,724	1,707,099	3,073,566	250,655	7,434,834	255,606	431,062	13,152,819	1,912,905	881,949
New York, New Haven & Hartford.....	1,988	2,613,579	2,257,143	5,270,722	433,923	947,800	35,371	2,760,380	89,777	173,435	4,404,470	1,284,096	275,000
New York, Susquehanna & Western.....	1,440	182,174	44,559	226,733	16,343	33,688	1,971	53,021	.....	6,006	222,806	32,966	16,800
Norfolk & Western.....	2,085	3,944,409	400,059	4,527,345	404,343	778,151	61,589	1,394,249	8,694	86,360	2,727,661	1,799,684	230,000
Norfolk Southern.....	908	297,858	71,710	394,870	40,828	62,647	9,128	135,216	76	121,086	267,095	127,775	2,464
Northern Pacific.....	6,514	4,022,867	896,478	5,420,116	575,189	659,274	101,640	1,999,537	92,109	121,086	3,450,565	413,316	1,555,733
Northwestern Pacific.....	507	131,907	103,958	266,294	50,390	47,757	4,592	114,886	776	10,648	228,613	18,457	19,219
Oahu Railway & Land Co.....	114	61,797	23,021	84,818	10,084	8,694	941	25,667	.....	4,549	49,902	9,260	36,542
Oregon Short Line.....	2,307	1,310,553	325,551	1,784,640	218,816	250,012	34,248	582,843	34,066	75,897	1,195,871	588,769	143,410
Oregon-Washington R. R. & Nav. Co.....	2,052	890,926	310,852	1,322,339	209,826	164,268	45,105	504,006	21,818	73,546	1,018,188	304,151	99,600
Panhandle & Santa Fe.....	670	378,606	78,359	456,965	64,803	82,396	4,037	135,293	.....	11,928	298,310	14,024	169,297
Pennsylvania Company.....	1,755	1,101,994	869,338	2,456,142	562,399	1,071,455	88,101	2,876,745	43,301	143,411	4,781,279	348,338	673,541
Pennsylvania Railroad.....	4,536	11,502,455	3,342,496	16,790,813	2,273,346	3,798,573	206,666	8,239,626	296,210	505,566	15,315,673	1,475,140	729,369
Pere Marquette.....	2,249	1,076,256	263,215	1,518,990	121,770	425,632	38,304	883,951	4,098	46,407	1,519,598	19,058	1,519,598
Philadelphia, Baltimore & Washington.....													

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF FEBRUARY, 1917—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.			
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of way and structures.	Equipment.	Traffic.					Transportation.	Miscellaneous.	General.	Total.
St. Louis Merchant's Bridge Terminal.....	9	\$687,969	\$568	\$233,062	\$24,292	\$15,491	\$896	\$125,431	.....	\$6,349	\$172,460	\$60,602	\$52,926	\$8,532
St. Louis Southwestern.....	943	282,188	117,482	400,670	75,539	139,792	12,518	216,333	2,265	26,198	400,436	360,981	326,877	157,271
St. Louis Southwestern of Texas.....	510	177,495	69,004	246,499	38,618	98,061	12,135	181,595	1,040	14,968	374,816	360,981	326,877	157,271
San Antonio & Aransas Pass.....	726	1,082,273	59,504	2,549,344	62,218	46,463	5,952	135,060	.....	14,968	1,724,019	825,352	721,743	157,119
Seaboard.....	3,461	4,027,251	1,392,460	5,998,107	767,896	1,006,996	157,805	2,228,754	.....	179,115	4,357,356	1,140,751	1,359,771	279,027
Southern.....	6,983	46,482	26,414	85,307	25,332	8,046	2,757	36,884	.....	5,018	78,237	7,070	9,547	10,489
Southern in Mississippi.....	555	303,091	97,783	432,907	34,884	37,633	7,602	96,532	4,204	14,079	194,518	238,389	180,918	80,950
Spokane, Portland & Seattle.....	295	81,684	25,713	120,934	19,414	20,447	5,855	51,037	.....	6,827	103,580	17,355	12,554	13,779
Tennessee Central.....	37	.....	353	252,415	21,571	17,572	940	82,219	1,864	3,292	129,458	122,958	90,113	38,869
Terminal R. R. Ass'n. of St. Louis.....	468	311,696	101,755	454,664	55,506	76,781	8,899	155,099	14,036	11,130	321,405	133,259	108,669	50,835
Texas & Pacific.....	1,947	1,079,933	365,852	1,590,046	192,357	249,269	38,002	681,259	13,231	55,183	1,222,160	357,886	276,093	81,112
Toledo & Ohio Central.....	436	371,795	40,673	430,172	62,841	100,745	7,303	243,154	1,651	10,997	436,691	1,382	24,757	101,280
Toledo, Peoria & Western.....	248	51,140	32,095	88,902	15,371	24,398	1,972	48,524	.....	1,451	82,704	8,182	7,500	1,302
Toledo, St. Louis & Western.....	451	423,480	23,346	471,090	55,676	82,278	16,268	174,224	.....	8,855	376,967	94,123	75,123	59,967
Ulster & Delaware.....	129	21,438	11,011	47,924	8,276	12,153	923	25,827	457	3,695	51,361	3,438	4,000	7,393
Union Pacific.....	3,622	3,255,160	741,852	4,479,581	541,226	696,186	118,415	1,641,077	90,900	170,404	3,248,791	1,230,790	931,731	1,259,415
Union R. R. of Baltimore.....	8	117,247	27,035	146,595	9,530	.....	.....	6,811	.....	2,087	18,428	128,167	7,453	17,520
Union R. R. of Pennsylvania.....	31	.....	.....	307,266	20,041	108,402	118	187,538	.....	5,617	321,715	14,449	21,449	83,223
Vicksburg, Shreveport & Pacific.....	171	105,745	39,391	165,010	18,773	27,418	4,728	49,436	1,535	6,332	108,222	56,788	46,338	15,904
Virginian.....	513	596,775	32,585	669,644	57,464	109,900	5,312	212,172	13,701	15,103	413,446	256,198	222,195	129,241
Wabash.....	2,519	1,984,563	490,157	2,718,335	205,895	418,234	91,857	1,222,881	16,587	72,078	2,026,833	691,501	591,698	181,917
Wabash-Pittsburgh Terminal.....	63	77,703	8,203	93,699	14,300	17,758	1,568	36,430	2,468	4,084	76,608	17,991	8,324	9,166
Washington Southern.....	36	54,976	84,623	180,192	12,069	17,047	1,819	60,821	1,909	3,812	97,478	82,715	78,570	12,407
West Jersey & Seashore.....	359	194,235	251,106	487,487	137,906	92,560	10,985	284,368	3,258	17,337	587,391	292,807	256,807	47,149
Western Maryland.....	775	836,220	64,422	975,219	110,562	158,528	20,256	358,821	10,596	19,053	682,412	292,807	256,807	47,149
Western Pacific.....	958	380,244	62,823	480,985	80,706	67,508	19,240	197,083	9,496	16,593	393,626	87,359	54,896	32,463
Western Ry. of Alabama.....	133	60,095	35,467	110,549	15,844	21,960	6,723	35,867	2,231	4,405	86,528	24,021	17,955	16,201
Wheeling & Lake Erie.....	512	479,057	45,271	575,374	58,944	98,178	7,795	237,363	1,688	17,998	421,566	153,808	43,213	110,595
Wichita Valley.....	257	50,434	14,710	70,144	12,547	4,706	96	22,485	.....	1,156	40,990	29,154	25,300	1,691
Yazoo & Mississippi Valley.....	1,382	901,411	244,403	1,228,968	195,565	218,358	21,828	422,162	.....	35,712	892,748	336,220	271,389	109,180
TWO MONTHS OF CALENDAR YEAR, 1917														
Alabama & Vicksburg.....	143	\$227,176	\$69,120	\$226,867	\$46,890	\$5,988	\$5,988	\$114,705	\$5,355	\$13,396	\$239,228	\$87,639	\$20,500	\$12,341
Alabama Great Southern.....	312	674,736	222,105	984,524	118,118	202,764	33,889	319,076	5,766	23,239	702,852	281,672	282,558	8,030
Ann Arbor.....	294	316,675	42,849	418,042	48,961	81,173	11,004	205,048	675	18,452	359,313	58,729	32,419	26,894
Arizona Eastern.....	378	626,842	102,494	773,820	84,282	64,952	5,234	153,726	7,556	26,999	342,375	431,446	399,244	267,692
Atchison, Topeka & Santa Fe.....	8,643	14,182,073	4,828,998	25,565,349	1,960,598	3,452,116	353,899	6,449,885	64,003	419,944	12,669,390	7,935,959	1,011,532	1,959,552
Atlanta & West Point.....	93	129,412	92,846	256,546	28,261	43,016	15,079	79,866	5,414	9,811	181,445	60,592	13,833	13,833
Atlanta, Birmingham & Atlantic.....	640	473,787	88,190	606,689	75,083	98,862	30,626	255,771	108	22,203	482,652	124,037	96,631	39,258
Atlantic & St. Lawrence.....	167	271,338	38,945	339,441	48,488	55,429	8,415	126,990	.....	13,446	352,768	13,327	34,769	14,371
Atlantic Coast Line.....	4,775	4,790,671	2,070,481	7,500,815	797,328	1,026,742	140,112	2,667,996	40,040	163,112	4,430,551	3,070,264	2,706,722	568,199
Baltimore & Ohio.....	4,545	14,429,475	2,408,597	18,338,009	1,821,837	3,788,628	371,293	7,371,950	132,486	483,937	13,967,700	4,470,308	700,059	403,887
Baltimore & Ohio Chicago Terminal.....	79	.....	864	274,391	18,271	57,053	2,033	232,954	2,648	12,869	324,146	49,755	45,377	95,527
Baltimore, Chesapeake & Atlantic.....	88	61,594	28,061	95,333	15,217	21,369	2,825	75,094	.....	18,269	119,413	24,080	28,662	20,521
Belt Ry. Co. of Chicago.....	321	.....	354,724	35,678	83,275	83,275	2,682	324,047	.....	13,444	459,486	75,238	27,163	54,538
Bessemer & Lake Erie.....	205	907,057	47,757	992,897	106,161	449,225	19,084	386,142	.....	32,215	978,148	14,748	37,966	190,575
Bingham & Garfield.....	36	411,145	12,091	428,012	38,120	54,694	2,794	73,928	157	6,390	176,082	251,930	246,669	69,144
Boston & Maine.....	2,305	5,160,406	2,403,953	8,520,163	905,748	1,304,402	59,952	4,612,004	40,324	196,217	7,118,469	1,401,514	1,059,342	799,610
Buffalo & Susquehanna R. R. Corporation.....	253	244,568	11,923	261,129	38,236	75,909	2,807	80,581	.....	11,909	209,443	51,686	46,486	49,062
Buffalo, Rochester & Pittsburgh.....	586	1,664,181	183,031	1,905,459	180,277	520,393	30,573	762,997	2,665	51,787	1,548,691	356,679	50,000	306,764
Canadian Pacific Lines in Maine.....	234	516,441	27,310	662,570	35,190	70,545	11,395	249,604	.....	11,169	377,811	184,759	11,000	173,759
Carolina, Clinchfield & Ohio.....	283	558,185	38,332	611,365	51,175	91,768	33,187	128,306	.....	24,768	328,285	283,080	26,800	30,126
Carolina, Clinchfield & Ohio of S. C.....	18	28,090	2,533	31,811	2,400	192	4,642	6,180	.....	1,580	14,994	1,6817	1,200	1,554
Central of New Jersey.....	684	3,957,127	902,734	5,327,619	436,889	1,046,357	62,527	2,157,888	30,145	127,660	3,860,425	1,467,194	318,240	1,48,948
Central New England.....	301	660,865	158,078	758,053	138,769	99,155	2,104	301,893	.....	15,253	537,113	200,941	34,000	166,934
Central Vermont.....	411	382,638	33,419	588,570	68,336	98,658	15,363	328,479	4,762	21,275	356,772	51,798	31,130	75,175
Charleston & Western Carolina.....	342	263,342	59,323	373,891	63,960	45,803	8,503	123,819	.....	7,803	249,791	13,000	20,537	107,402
Chesapeake & Ohio Lines.....	2,381	6,452,468	936,977	7,900,081	974,121	1,581,774	116,936	2,682,696	60,825	176,792	5,590,023	2,310,058	269,000	2,040,836
Chicago & Alton.....	1,053	2,050,653	637,659	2,952,584	592,294	795,648	75,648	1,087,203	19,903	65,893	2,135,771	774,327	101,851	78,039
Chicago & Erie.....	1,070	972,181	82,982	1,160,626	112,923	170,115	37,838	610,019	5,971	34,951	969,916	190,711	62,550	128,161
Chicago & Northwestern.....	8,108	9,581,267	3,302,981	14,864,548	1,392,913	2,704,727	222,207	6,375,717	119,931	405,735	11,200,276	3,364,272	850,000	2,513,326
Chicago & Northwestern.....	9,373	13,171,274	3,432,480	18,183,546	2,281,363	4,273,115	254,470	6,251,762	218,600	414,990	11,294,345	6,889,201	843,354	6,045,847
Chicago, Burlington & Quincy.....	9,373	13,171,274	3,432,480	18,183,546	2,281,363	4,273,115	254,470	6,251,762	218,600	414,990	11,294,345	6,889,201	843,354	6,045,847
Chicago, Detroit & Can. Gd. Trk. Jctn.....	1,496	1,670,927	548,866	2,429,967	323,833	429,199	90,453	1,020,566	22,506	116,019	1,930,766	499,102	101,000	37,266
Chicago, Great Western.....	1,496	1,670,927	548,866	2,429,967	323,833	429,199	90,453	1,020,566	22,506	116,019	1,930,766	499,102	101,000	37,266
Chicago, Indianapolis & Louisville.....	654	984,008	282,060	1,378,261	122,546	270,541	41,154	536,167	922	38,160	1,008,942	369,316	61,717	307,505

TWO MONTHS OF CALENDAR YEAR, 1917

Alabama & Vicksburg.....	143	\$227,176	\$69,120	\$326,867	\$46,896	\$48,890	\$9,988	\$114,705	\$5,355	\$13,396	\$239,228	\$87,639	\$67,138	\$12,341
Alabama Great Southern.....	312	674,736	222,105	918,524	118,118	202,764	33,889	202,076	5,766	23,239	702,852	281,672	242,558	8,030
Ann Arbor.....	294	316,675	75,849	418,042	42,961	81,173	11,004	205,048	675	18,452	359,313	58,729	32,419	56,894
Arizona Eastern.....	378	626,842	102,944	84,282	84,282	64,952	5,234	153,726	7,556	26,999	342,375	431,446	399,244	267,692
Atchafalaya, Topeka & Santa Fe.....	8,643	14,182,073	4,828,098	20,605,349	1,960,598	3,452,176	353,899	6,449,885	64,003	419,944	12,669,390	7,935,959	1,011,532	1,959,592
Atlanta & West Point.....	93	129,412	92,846	28,261	43,016	79,866	15,079	79,866	5,414	9,811	181,445	75,101	60,592	13,833
Atlanta, Birmingham & Atlantic.....	640	473,787	88,109	606,689	75,083	98,862	30,626	255,771	1,108	22,203	482,652	124,037	27,400	39,258
Atlantic & St. Lawrence.....	167	271,338	38,945	339,441	48,488	55,429	8,415	236,990	.....	13,446	352,768	13,327	21,442	31,371
Atlantic Coast Line.....	4,775	4,790,671	2,070,481	7,500,815	797,328	1,026,742	140,115	2,267,996	40,040	183,112	4,430,551	3,070,264	2,706,722	568,199
Baltimore & Ohio.....	4,545	14,429,475	2,408,597	18,438,009	1,821,837	3,788,628	371,295	7,371,950	132,486	483,937	13,967,700	4,470,308	3,769,345	403,887
Baltimore, Chesapeake & Atlantic.....	79	.....	864	274,391	18,271	57,653	2,033	232,934	2,648	12,869	324,146	49,755	45,377	95,529
Belt Ry. Co. of Chicago.....	88	61,594	28,061	95,333	15,217	21,369	2,825	75,094	.....	4,908	119,413	24,080	28,662	20,521
Bessemer & Lake Erie.....	31	907,057	47,757	992,897	106,161	49,225	2,682	324,407	.....	13,444	459,486	75,238	48,075	54,538
Birmingham & Garfield.....	205	411,145	12,091	428,012	38,120	54,694	19,084	386,142	.....	32,215	978,148	14,748	37,966	190,575
Boston & Maine.....	36	.....	.....	.....	.....	.....	2,794	73,928	157	6,390	176,082	251,930	246,669	69,144
Buffalo & Susquehanna R. R. Corporation.....	2,305	5,160,406	2,403,953	8,520,163	905,748	1,304,402	59,952	4,612,004	40,324	196,217	7,118,649	1,401,514	342,172	1,059,343
Buffalo, Rochester & Pittsburgh.....	253	244,568	11,923	261,129	38,236	75,909	2,807	80,581	.....	11,909	209,443	51,686	46,486	49,062
Canadian Pacific Lines in Maine.....	586	1,664,183	183,031	1,905,459	180,277	30,573	30,573	762,997	2,665	51,787	1,548,691	356,767	50,000	306,764
Canadian Pacific Lines in Ontario.....	234	516,441	27,310	562,570	70,454	29,604	11,395	249,604	.....	11,169	377,811	184,759	11,000	173,759
Carolina, Clinchfield & Ohio.....	283	558,185	38,332	611,365	51,175	71,768	33,187	128,306	.....	24,768	328,285	283,080	256,274	30,126
Carolina, Clinchfield & Ohio of S. C.....	18	28,090	2,533	31,811	2,400	192	4,642	6,180	.....	1,580	14,994	16,817	1,200	15,613
Central of New Jersey.....	684	3,957,127	902,734	5,327,619	436,889	1,046,337	62,527	2,157,588	30,145	17,660	3,860,425	1,467,194	318,240	1,148,948
Central New England.....	301	660,865	55,078	758,053	138,769	99,135	2,104	301,893	.....	15,223	557,113	200,941	166,934	75,175
Central Vermont.....	411	382,638	138,419	568,570	68,336	98,658	15,363	328,479	4,762	21,173	568,772	51,988	20,537	107,402
Charleston & Western Carolina.....	342	263,332	59,323	337,891	33,790	45,803	8,503	123,819	.....	7,803	249,791	88,100	13,000	75,032
Chesapeake & Ohio Lines.....	2,381	6,452,468	936,977	7,900,081	974,121	1,581,774	116,936	6,826,696	60,825	176,792	5,990,023	2,310,058	269,000	2,040,836
Chesapeake & Alton.....	1,053	2,050,653	337,659	2,910,097	295,254	592,294	75,648	1,087,203	19,903	65,893	2,135,771	774,327	101,851	671,710
Chicago & Erie.....	270	972,181	82,982	1,160,626	112,923	170,115	37,838	610,019	5,971	34,951	969,916	190,711	62,550	128,161
Chicago & Northwestern.....	8,108	9,581,267	3,302,981	14,564,548	1,392,913	2,704,778	222,207	6,375,751	119,931	405,735	11,200,276	3,364,272	850,000	2,513,326
Chicago, Burlington & Quincy.....	9,373	13,117,274	3,422,480	18,183,546	1,273,155	2,881,363	254,470	6,231,762	218,600	414,969	11,294,345	6,899,201	843,354	6,045,847
Chicago, Detroit & Can. Gd. Trk. Jctn.....	60	121,238	31,979	193,060	13,151	32,355	2,991	116,511	.....	3,659	168,668	24,392	37,244	32,424
Chicago Great Western.....	1,496	1,670,927	548,866	2,429,867	253,833	429,199	90,453	1,020,566	22,506	116,019	1,930,766	499,102	101,000	396,106
Chicago, Indianapolis & Louisville.....	654	384,008	282,060	1,378,261	122,546	270,541	41,154	536,167	922	38,160	1,008,942	369,319	61,717	307,505

TWO MONTHS OF CALENDAR YEAR, 1917--CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net from railway operation.	Increase (or decr.) comp. with last year.			
		Freight.	Passenger.	Total (inc. misc.).	Traffic.	Trans- portation.	Miscel- laneous.					
Chicago Junction	13	\$10,204,015	\$2,737,482	\$439,989	\$48,909	\$2,392	\$330,395	\$11,086	\$440,764	\$4,990	\$5,738	\$51,991
Chicago, Milwaukee & St. Paul	10,230	\$10,204,015	\$2,737,482	\$439,989	\$48,909	\$2,392	\$330,395	\$11,086	\$440,764	\$4,990	\$5,738	\$51,991
Chicago, Peoria & St. Louis	255	\$79,623	\$1,964	\$37,915	\$3,132,924	\$292,952	\$7,443,383	\$31,952	\$1,429,922	\$23,890	\$1,509,127	\$1,530,605
Chicago, Rock Island & Gulf	477	\$439,989	\$129,851	\$612,397	\$9,270	\$19,242	\$142,262	\$1,883	\$70,290	\$2,000	\$5,606	\$3,668
Chicago, Rock Island & Pacific	7,656	\$6,617,559	\$3,037,282	\$12,705,508	\$2,486,769	\$1,297	\$202,998	\$17,917	\$30,645	\$181,732	\$20,000	\$35,902
Chicago, St. Paul, Minn. & Omaha	1,753	\$1,866,594	\$773,880	\$2,893,382	\$1,317,771	\$475,954	\$1,130,503	\$324,587	\$10,989,531	\$634,088	\$1,971,679	\$353,532
Chicago, Terre Haute & Southeastern	673	\$508,036	\$31,930	\$52,653	\$4,629	\$8,699	\$186,943	\$89,150	\$2,880,725	\$176,170	\$176,170	\$232,103
Cincinnati, Hamilton & Dayton	322	\$1,164,455	\$194,799	\$1,531,318	\$213,356	\$29,131	\$756,022	\$16,136	\$1,738,170	\$67,966	\$60,724	\$7,652
Cincinnati, Indianapolis & Western	332	\$323,493	\$79,699	\$433,331	\$33,422	\$14,839	\$188,261	\$5,181	\$1,314,799	\$128,432	\$110,080	\$54,081
Cincinnati, New Orleans & Texas Pacific	337	\$1,343,267	\$465,328	\$1,937,931	\$188,803	\$427,352	\$1,493,1	\$45,109	\$1,358,848	\$79,083	\$77,000	\$502,071
Cincinnati Northern	246	\$12,765	\$28,897	\$351,706	\$49,717	\$5,866	\$154,599	\$6,820	\$280,490	\$14,000	\$7,215	\$8,733
Cleveland, Cincinnati, Chic. & St. Louis	2,367	\$5,922,977	\$1,560,768	\$7,322,722	\$64,626	\$161,005	\$356,496	\$168,366	\$901,330	\$320,000	\$1,100,334	\$832,940
Coal & Coke	197	\$152,985	\$6,013	\$191,055	\$23,652	\$2,176	\$75,178	\$7,741	\$161,099	\$18,000	\$19,956	\$21,752
Colorado Midland	308	\$1,364,192	\$228,068	\$1,735,908	\$131,164	\$13,069	\$110,478	\$50,304	\$272,949	\$18,000	\$27,316	\$26,126
Colorado & Southern	1,103	\$1,364,192	\$228,068	\$1,735,908	\$131,164	\$13,069	\$110,478	\$50,304	\$272,949	\$18,000	\$27,316	\$26,126
Cripple Creek & Colorado Springs	87	\$190,238	\$23,803	\$217,545	\$21,627	\$2,912	\$15,576	\$6,073	\$106,334	\$11,210	\$11,210	\$12,933
Cumberland Valley	164	\$498,706	\$102,710	\$634,560	\$43,553	\$7,071	\$225,873	\$18,372	\$358,482	\$6,987	\$258,091	\$20,720
Delaware & Hudson Co.—R. R. Dept.	886	\$3,116,266	\$380,786	\$3,914,249	\$390,419	\$50,485	\$1,080,368	\$160,068	\$3,103,307	\$605,942	\$125,180	\$885,830
Denver & Rio Grande	2,578	\$1,162,666	\$393,916	\$3,433,039	\$793,291	\$77,863	\$1,323,211	\$2,708,940	\$2,334,100	\$185,000	\$1,048,993	\$30,402
Denver & Salt Lake	255	\$219,986	\$27,985	\$247,974	\$89,583	\$3,320	\$151,580	\$9,958	\$151,414	\$16,500	\$60,929	\$71,744
Detroit & Mackinac	383	\$109,526	\$47,096	\$172,331	\$22,700	\$3,907	\$73,482	\$7,094	\$151,455	\$16,065	\$4,812	\$1,719
Detroit & Toledo Shore Line	81	\$296,580	\$298,061	\$14,393	\$8,711	\$3,381	\$92,484	\$5,915	\$134,845	\$163,216	\$11,950	\$151,266
Detroit, Grand Haven & Milwaukee	191	\$291,000	\$2,500	\$437,510	\$69,049	\$10,699	\$310,870	\$12,382	\$446,058	\$7,240	\$16,176	\$49,466
Detroit, Toledo & Ironton	441	\$350,766	\$23,641	\$401,045	\$31,596	\$7,899	\$260,764	\$6,317	\$369,874	\$21,171	\$16,000	\$15,020
Duluth & Iron Range	269	\$143,381	\$43,986	\$207,396	\$128,549	\$2,259	\$166,180	\$22,171	\$413,594	\$36,198	\$13,791	\$219,990
Duluth, Missabe & Northern	414	\$224,956	\$8,614	\$235,497	\$192,097	\$217,015	\$6,579	\$204,059	\$53,684	\$16,301	\$344,489	\$17,788
Duluth, South Shore & Atlantic	308	\$94,142	\$130,999	\$58,093	\$85,653	\$14,488	\$251,016	\$7,195	\$17,428	\$60,827	\$6,827	\$5,192
Duluth, Winnipeg & Pacific	191	\$302,653	\$55,064	\$366,781	\$18,883	\$3,959	\$157,195	\$3,162	\$144,138	\$18,321	\$104,322	\$27,300
El Paso & Southwestern Co.	1,028	\$1,875,107	\$414,819	\$2,407,095	\$234,319	\$42,074	\$596,803	\$6,694	\$1,186,829	\$1,220,266	\$77,286	\$1,142,980
Elgin, Joliet & Eastern	801	\$2,062,706	\$3,533	\$2,255,964	\$194,051	\$639,036	\$793,559	\$40,084	\$1,861,806	\$95,980	\$478,173	\$33,556
Erie	1,988	\$6,966,238	\$1,386,432	\$6,443,079	\$903,205	\$252,975	\$4,959,580	\$72,389	\$9,134,209	\$448,970	\$143,149	\$2,251,107
Florida East Coast	765	\$705,935	\$732,323	\$1,979,686	\$134,385	\$12,117	\$98,416	\$12,177	\$33,619	\$752,595	\$927,091	\$131,856
Fort Worth & Denver City	454	\$723,520	\$231,266	\$1,064,194	\$164,194	\$33,429	\$294,856	\$5,075	\$34,692	\$61,375	\$34,916	\$87,404
Galveston, Harrisburgh & San Antonio	1,361	\$2,168,593	\$665,148	\$3,009,492	\$374,485	\$69,646	\$1,011,986	\$26,059	\$1,941,749	\$1,067,742	\$963,728	\$814,999
Galveston Wharf	14	\$56,158	\$3,345	\$287,9	\$287,9	\$658	\$50,000	\$45,636	\$103,867	\$21,000	\$91,290	\$2,352
Georgia	307	\$67,662	\$141,412	\$553,609	\$55,236	\$27,002	\$230,593	\$270	\$17,138	\$16,899	\$10,855	\$13,310
Georgia, Southern & Florida	402	\$274,300	\$130,977	\$488,880	\$66,944	\$14,846	\$174,106	\$257	\$19,202	\$64,003	\$124,738	\$40,551
Grand Canyon	84	\$24,724	\$206,468	\$75,054	\$2,897	\$3,848	\$3,743	\$8,693	\$1,262	\$2,625	\$3,534	\$48,110
Grand Rapids & Indiana	575	\$31,608	\$206,468	\$916,721	\$129,678	\$18,852	\$45,728	\$888	\$7,371	\$816,688	\$9,940	\$37,117
Grand Trunk Western	347	\$936,200	\$211,000	\$1,271,687	\$120,093	\$31,195	\$60,575	\$3,812	\$1,115,847	\$155,840	\$74,470	\$246,123
Great Northern	8,198	\$7,442,552	\$2,009,389	\$10,604,459	\$1,295,737	\$214,353	\$4,469,108	\$165,076	\$24,024	\$2,889,148	\$817,390	\$190,132
Gulf & Ship Island	308	\$247,195	\$55,098	\$322,602	\$30,406	\$6,416	\$103,679	\$620	\$17,121	\$202,041	\$120,561	\$6,377
Gulf, Colorado & Santa Fe	1,938	\$1,978,608	\$445,369	\$2,579,638	\$449,033	\$49,644	\$891,435	\$103,653	\$1,893,355	\$118,965	\$566,057	\$79,691
Hackberry, Mobile & Northern	402	\$265,288	\$49,912	\$335,010	\$44,591	\$54,770	\$107,957	\$13	\$16,134	\$23,172	\$102,338	\$14,556
Hocking Valley	350	\$1,097,924	\$129,348	\$1,294,348	\$125,274	\$18,002	\$460,908	\$32,705	\$956,704	\$98,000	\$239,259	\$57,749
Houston, East & West Texas	91	\$215,370	\$47,356	\$200,171	\$61,119	\$32,554	\$100,446	\$4,248	\$6,283	\$180,564	\$13,162	\$43,398
Houston & Texas Central	918	\$850,880	\$247,328	\$1,201,140	\$181,369	\$30,555	\$34,367	\$397,987	\$38,028	\$809,591	\$65,228	\$204,869
Illinois Harbor	4,766	\$9,367,419	\$2,560,414	\$13,024,070	\$1,631,523	\$2,731,725	\$234,647	\$322,165	\$9,340,767	\$3,683,394	\$2,953,285	\$601,108
Indiana Central	109	\$1,192,206	\$360,119	\$1,719,172	\$260,928	\$43,718	\$711,184	\$18,921	\$602,555	\$17,749	\$156,325	\$47,183
International & Great Northern	1,160	\$1,192,206	\$360,119	\$1,719,172	\$260,928	\$43,718	\$711,184	\$18,921	\$602,555	\$17,749	\$156,325	\$47,183
Iowa & Michigan	177	\$417,318	\$57,979	\$491,277	\$74,227	\$134,780	\$157,362	\$14,897	\$387,298	\$103,979	\$69,010	\$110,798
Kansas City, Mexico & Orient of Texas	466	\$161,195	\$32,699	\$205,854	\$38,637	\$7,780	\$111,715	\$9,009	\$213,879	\$8,025	\$18,586	\$1,937
Kansas City Southern	836	\$1,636,462	\$260,476	\$2,067,054	\$211,943	\$256,069	\$647,933	\$69,224	\$1,235,210	\$834,843	\$116,110	\$269,096
Lake Erie & Western	900	\$1,127,460	\$105,609	\$1,293,981	\$120,737	\$21,448	\$309,379	\$29,659	\$896,535	\$397,447	\$347,407	\$43,996
Lehigh Valley	1,443	\$722,543	\$692,895	\$77,282	\$1,357,259	\$168,920	\$1,411,419	\$181,044	\$6,220,799	\$742,097	\$320,000	\$421,880
Lehigh & Hudson River	97	\$290,669	\$7,492	\$327,792	\$42,300	\$2,772	\$128,050	\$8,693	\$241,161	\$11,200	\$75,432	\$28,524
Lehigh & New England	296	\$477,941	\$2,913	\$504,313	\$65,300	\$9,519	\$150,513	\$16,873	\$326,226	\$178,087	\$176,760	\$60,417
Long Island	397	\$627,442	\$1,076,172	\$1,981,510	\$304,019	\$277,184	\$1,055,907	\$75,774	\$1,742,698	\$238,812	\$146,694	\$92,077
Los Angeles & Salt Lake	1,154	\$1,070,224	\$455,200	\$1,697,418	\$200,456	\$61,575	\$1,051,974	\$46,575	\$1,204,600	\$492,818	\$104,554	\$387,939
Louisiana & Arkansas	302	\$173,851	\$34,672	\$217,216	\$46,025	\$7,407	\$171,244	\$8,467	\$170,201	\$20,196	\$26,817	\$4,411
Louisiana Ry. & Navigation Co.	342	\$306,907	\$8,571	\$381,728	\$54,393	\$12,430	\$142,531	\$14,346	\$264,771	\$29,000	\$78,851	\$24,218
Louisiana Western	208	\$48,532	\$14,559	\$22,700	\$7,702	\$1,483	\$13,020	\$1,343	\$26,776	\$3,678	\$24,266	\$88,431
Louisville & Nashville	5,070	\$231,093	\$11,301,022	\$1,270,132	\$44,341	\$14,483	\$3,529,777	\$32,998	\$7,339,947	\$3,007,074	\$3,401,295	\$366,035
Louisville, Henderson & St. Louis	200	\$246,336	\$64,697	\$331,380	\$42,977	\$9,873	\$116,634	\$6,908	\$207,632	\$123,748	\$16,143	\$40,505
Maine Central	1,222	\$1,410,837	\$47,566	\$2,030,377	\$262,581	\$21,888	\$1,015,016	\$52,961	\$1,680,436	\$343,941	\$117,412	\$226,466
Michigan Central	1,862	\$4,937,988	\$1,730,608	\$7,511,265	\$789,817	\$1,227,199	\$3,790,669	\$164,748	\$6,228,727	\$282,538	\$312,000	\$698,292
Midland Valley	385	\$303,074	\$84,495	\$404,289	\$77,439	\$5,662	\$136,125	\$15,962	\$293,516	\$110,773	\$100,348	\$52,036
Minneapolis & St. Louis	120	\$182,490	\$5,667	\$192,130	\$40,785	\$9,949	\$101,300	\$15,676	\$185,939	\$6,196	\$6,000	\$1,966
Minner. St. Paul & S. S. Marie	4,228	\$3,013,556	\$1,001,551	\$4,427,650	\$422,303	\$79,907	\$1,799,977	\$134,851	\$1,275,510	\$182,676	\$1,092,834	\$620,100

Railroads Prepared for Military Movements

The declaration of a state of war between the United States and Germany was followed by quickened activity on the part of the railroads of the country in preparation for the performance of their duties in the present emergency. One of the first steps was the calling out of the National Guard troops for the guarding of railroad bridges, as well as other important public and private property. In some cases where the troops are guarding railroad bridges at points remote from a city or town the roads have furnished them boarding cars. M. J. Gormley, chief clerk to R. H. Aishton, president of the Chicago & North Western, who is also chairman for the central department of the National Defense Committee of the American Railway Association, has been assigned as transportation expert to General Barry, of Chicago, and has taken quarters in the offices of the War department of the Central district.

The sub-committee on passenger traffic of the National Defense Committee of the American Railway Association met at Chicago on April 9 for the purpose of connecting up the routes they prepared for the movement of troops and military supplies in the territories under their supervision. The committees have carefully worked out routes for all conceivable military movements so that no time will be lost in arranging the details of routing whenever the carriers are called upon to supply the army with transportation facilities. Special attention was given to arrangements for movements through gateways without congestion. The terminal and yard facilities of Chicago, St. Louis, Memphis, New Orleans and other large railroad centers have been carefully charted, and running schedules of trains for any possible movement from one part of the country to another have been provided for. The charts and plans prepared by the members of the committee for the territories under their jurisdiction were consolidated so that the routes, together with the running schedules, will be continuous and not subject to delays. The preparation of the information assembled at the Chicago meeting required 18 months of expert analysis, and in this work the committee profited by the experience gained in the movement to the Mexican border last summer.

The committee is composed of representatives of all the territorial passenger associations, and its personnel is as follows: E. L. Bevington, chairman, the Western Military committee, Chicago; F. C. Donald, agent, Central committee, Chicago; C. L. Hunter, agent, Trunk Line committee, New York; W. H. Howard, agent, Southeastern committee, at Atlanta, Ga.; W. L. Pratt, agent, New England committee, Boston, Mass.

Railway Revenues and Expenses for January

The net operating income of the railways of the United States for January, 1917, was greater than January, 1916, by \$30 per mile, or 10.6 per cent, according to the compilations of the Bureau of Railway Economics.

Total operating revenues, \$300,694,385, exceeded those for January, 1916, by \$39,782,996. Operating expenses, \$214,951,191, were greater by \$31,248,232. Net operating revenue, \$85,743,194, made a gain of \$8,534,764. Taxes, \$13,762,116, increased by \$1,369,022. Net operating income was \$17,929,868, which is an increase of \$7,156,121.

If spread over the mileage represented, operating revenues averaged \$1,301 per mile, an increase of 14.7 per cent; operating expenses per mile, \$930, were greater by 16.5 per cent; net operating revenue per mile, \$371, shows an increase of 10.6 per cent; while net operating income per mile, \$311, showed an increase of 10.6 per cent. Taxes per mile rose 10.6 per cent.

This summary covers 231,194 miles of operated line, or about 90 per cent of the steam railway mileage of the United States.

For the eastern railways, operating revenues per mile exceeded those for January, 1916, by 8.3 per cent; operating expenses rose 17.0 per cent; net operating revenue decreased 12.7 per cent; and taxes increased 10.3 per cent. Operating income per mile decreased 16.6 per cent.

For the southern railways, operating revenues per mile exceeded those for January, 1916, by 16.3 per cent; operating expenses rose 13.7 per cent; net operating revenue increased 21.5 per cent; and taxes, 13.1 per cent. Operating income per mile increased 22.9 per cent.

For the western railways, operating revenues per mile exceeded those for January, 1916, by 22.5 per cent; operating expenses rose 17.2 per cent; net operating revenue increased 35.6

SUMMARY FOR THE MONTH OF JANUARY, 1917, OF REVENUES AND EXPENSES OF STEAM ROADS.

Account	UNITED STATES				EASTERN DISTRICT				SOUTHERN DISTRICT				WESTERN DISTRICT			
	Amount, 1917		Per mile of line		Amount, 1917		Per mile of line		Amount, 1917		Per mile of line		Amount, 1917		Per mile of line	
Total operating revenues.....	\$300,694,385	\$1,301	14.7	1917	\$133,112,740	\$2,245	8.3	1917	\$47,493,955	\$1,111	16.3	1917	\$120,087,690	\$930	22.5	1917
Freight	211,785,816	916	13.4	1916	93,048,033	1,569	5.4	1916	34,565,178	809	15.1	1916	84,172,605	652	23.4	1916
Passenger	59,350,825	257	18.5	1916	25,508,769	430	14.3	1916	9,312,639	218	20.1	1916	24,529,417	190	155	1916
Mail	5,442,593	24	8.6	1916	2,209,775	37	31	1916	779,232	18	15	1916	2,453,586	19	19	1916
Express	7,928,042	34	24.2	1916	3,560,673	60	48	1916	1,214,556	28	24	1916	3,152,813	24	19	1916
All other	16,187,109	70	17.1	1916	8,785,490	149	128	1916	1,622,350	38	33	1916	5,779,269	45	38	1916
Total operating expenses.....	214,951,191	930	16.5	1917	101,631,285	1,714	17.0	1917	31,149,219	729	641	1917	82,170,687	636	543	1917
Maintenance of way and structures.....	32,050,358	139	12.5	1916	13,849,524	233	208	1916	5,389,539	126	108	1916	12,811,295	99	93	1916
Maintenance of equipment.....	53,489,275	231	15.2	1916	25,731,262	434	376	1916	8,231,882	193	180	1916	19,526,131	151	127	1916
Traffic	5,326,583	23	6.7	1916	2,000,848	34	32	1916	1,073,594	25	23	1916	2,252,141	18	17	1916
Transportation	114,358,877	495	41.4	1916	55,466,601	936	784	1916	15,116,107	354	304	1916	43,776,169	339	280	1916
General	7,803,056	34	29	1916	3,420,712	58	49	1916	1,167,293	27	25	1916	3,215,051	25	21	1916
All other	1,923,042	8	7	1916	1,162,338	19	16	1916	170,804	4	1	1916	589,900	4	5	1916
Net operating revenue.....	85,743,194	371	10.6	1917	31,481,455	531	608	1917	16,344,736	382	315	1917	37,917,003	294	216	1917
Taxes	3,762,116	60	54	1916	5,736,496	97	88	1916	2,004,830	47	42	1916	6,020,790	47	42	1916
Uncollectible revenues	51,210	*	.....	1916	18,265	*	.....	1916	8,739	*	.....	1916	24,206	*	.....	1916
Operating income	71,929,868	311	10.6	1917	25,726,694	434	520	1917	14,331,167	335	273	1917	31,872,007	247	174	1917
Operating ratio—per cent—				1917				1917				1917				1917
1916		71.5		1916		76.3		1916		68.4		1916		65.6		1916
1917		70.4		1917		70.7		1917		71.5		1917		67.1		1917
Average mileage represented—				1917				1917				1917				1917
1916		231,193		1916		59,279		1916		129,176		1916		42,737		1916
1917		230,194		1917		59,218		1917		128,483		1917		42,492		1917

d Decrease.
* Less than one dollar.

per cent; and taxes, 10.2 per cent. Operating income per mile increased 41.7 per cent.

January net operating income per mile was 10.6 per cent greater in 1917 than in 1916, 80.9 per cent greater than in 1915, 76.5 per cent greater than in 1914 and 30.7 per cent greater than in 1913.

No Labor Disputes During the War

The Council of National Defense has adopted a report of its labor committee, of which Samuel Gompers, president of the American Federation of Labor, is chairman, recommending that the council shall issue a statement to employers and employees in industrial plants and transportation systems advising that neither employers nor employees shall endeavor to take advantage of the country's necessities to change existing standards of wages and working conditions. It is recommended that when economic or other emergencies arise requiring changes of standards, the same should be made only after such proposed changes have been investigated and approved by the Council of National Defense. It was also recommended that the council urge upon the legislatures of the states that before final adjournment they delegate to the governors of the respective states power to suspend or modify restrictions contained in their labor laws when requested by the Council of National Defense for a specified period, not to exceed the duration of the war. The labor committee includes Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers, and Elisha Lee, general manager of the Pennsylvania Railroad.

The June Conventions

The *Railway Age Gazette* has received a number of inquiries within the past few days asking whether the entry of our country into the war with Germany will affect the June conventions of the American Railway Master Mechanics' and Master Car Builders' associations. There appears to be no necessity for a postponement of these conventions at the present time, and it is quite possible that developments may make a meeting all the more necessary in order that special mechanical department problems referring to the handling of power and equipment may receive consideration.

The outlook for the exhibit is exceptionally good, more space having been disposed of up to this time than was sold at the time of the opening of the conventions last year. Indeed, so great has been the demand for space that it has been necessary to open up the northern section of Exhibition Hall; this has been closed off during the past three years.

The following exhibitors have been awarded space in addition to those which were mentioned in the *Railway Age Gazette* of March 9, page 413:

Atkins, E. C., & Co., Inc., Indianapolis, Ind.
Autographic Recorder Co., New York
Automatic Transportation Co., Buffalo
Boss Nut Company, Chicago
Cincinnati Iron & Steel Co., Cincinnati, Ohio
Cleveland Milling Machine Co., Cleveland, Ohio
Commonwealth Supply Co., Richmond, Va.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.
Goff Electro-Pneumatic Brake Co., Pittsburgh, Pa.
Houston, Stanwood & Gamble Co., Cincinnati, Ohio
Liberty Manufacturing Co., Pittsburgh, Pa.
Modern Machine Tool Co., Jackson, Mich.
McCabe Mfg. Co., Lawrence, Mass.
National Brake Co., Inc., Buffalo
Railway Devices Company, St. Louis, Mo.
Sarco Petroleum Products Co., Chicago
Schroeder Headlight Co., Evansville, Ind.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Standard Railway Equipment Co., New York
United States Lathe & Machine Co., Cincinnati, Ohio
White American Locomotive Sander Co., Roanoke, Va.
Willard Storage Battery Co., Cleveland, Ohio

The Pennsylvania announces that a special train from Chicago, to be called "The Master Mechanics' Special," will be available this year for the Master Car Builders' and Master Mechanics' Associations, to be held at Atlantic City, N. J., June 13 to 15 inclusive and June 18 to 20 inclusive. The train, having the same number of coaches and practically the same accommodations as on the train run last year, will leave Chicago Monday, June 11, at 3 p. m., and arrive in Atlantic City the following afternoon at 2 o'clock.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the *Railway Age Gazette* for each month.

- AIR BRAKE ASSOCIATION.—F. M. Nellis, Room 3014, 165 Broadway, New York City. Next annual convention, May 1-4, 1917, Hotel Chisca, Memphis, Tenn.
- AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago, Ill. Next meeting, June, 1917, Denver.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Next meeting, June 13-20, Atlantic City, N. J.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Next convention, May 21-24, Cincinnati, Ohio.
- ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—E. R. Woodson, Rooms 1116-8 Woodward Bldg., Washington, D. C. Annual meeting, May 30, 1917. Hotel Jefferson, Richmond, Va.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, Terminal Station, Central of New Jersey, Jersey City, N. J. Next meeting, May, 1917, Cincinnati, Ohio.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—W. L. Connelly, Superintendent of Telegraph, Indiana Harbor Belt, Gibson, Ind. Next meeting, April 19, La Salle Hotel, Chicago.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.
- FREIGHT CLAIM ASSOCIATION.—Warten P. Taylor, Traffic Manager, R. F. & P., Richmond, Va. Annual convention, June 19, Chicago, Ill.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, C. B. & O. R. R., 702 E. 51st St., Chicago. Next meeting, May 14-17, Hotel Sherman, Chicago.
- MASTER BOILERMAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Annual convention, May 22-25, Hotel Jefferson, Richmond, Va.
- MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Next meeting, June 13-20, Atlantic City, N. J.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August. Pittsburgh Commercial Club Rooms, Colonial Annex Hotel, Pittsburgh.
- RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Commissioner of Agriculture, St. L., Iron Mt. & So., 1047 Railway Exchange Bldg., St. Louis. Annual meeting, May 9-11, Louisville, Ky.
- RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, N. Y. C. R. R., Box C, Collinwood, Ohio. Annual convention, May 21-23, Hotel Sherman, Chicago.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.
- TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.
- TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next meeting, June 19, Fresno, Cal.
- UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.
- WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.
- WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

Samuel O. Dunn, editor of the *Railway Age Gazette*, addressed the Minneapolis (Minn.) Traffic Club, on April 12, on "Is the Railway Problem Insoluble?"

Summer tourist passenger fares from Chicago and all points east to Colorado, Utah, and Yellowstone Park, have been advanced \$2.50 by all lines on each round-trip ticket, effective about June 1. The advance, though relatively smaller, follows the increase in regular interstate passenger fares, which was put into effect about a year ago.

The Southern Railway is to have an agent in Buenos Aires, R. H. Ackerman, heretofore chief clerk in the South American agency at Chattanooga, having been named as Argentine agent. The company's South American agency at Chattanooga, Tenn., will be glad to forward to Mr. Ackerman any requests for information in regard to Argentine markets.

A continuation of the hearing before the Iowa Railroad Commission on the application of the Travelers' Protective Association for a revision of baggage charges was held on April 5, at Des Moines, Iowa. The session was devoted to the presentation of testimony by the carriers. E. R. Reynolds, general baggage agent of the Chicago Great Western, was the chief witness of the railroads.

The Southern Railway has established in the office of the general freight agent at Atlanta an "apprentice squad" composed of 11 men. Graduates of universities in the southern states are invited to join this squad, the pay for the first six months to be \$40 a month. At the end of the six months the pay to those in the squad who have made satisfactory progress will be advanced to \$50.

At the annual election of the Pittsburgh Association of Freight Traffic Agents held on March 19 at Pittsburgh, Pa., the following officers were elected for the ensuing year: President, C. T. Phillips, traveling freight agent of the Union Pacific; vice-president, H. C. Mitchell, commercial agent of the St. Joseph & Grand Island; vice-president, J. L. Chapman, traveling freight agent of the Southern Pacific; secretary, F. G. Schultz, traveling freight agent of the New York Central; treasurer, A. R. McCormick, traveling freight agent of the Southern.

J. C. Lincoln, traffic manager of the Merchants' Association, of New York City, has sent to the Interstate Commerce Commission a protest against the diversity of freight classifications, in use by the railroads, and the inconvenience thereby caused to New York shippers. Mr. Lincoln proposes a consolidated classification. He recognizes the difficulties of making a single uniform classification for the whole country, but calls attention to what has already been accomplished in that direction, and suggests that the three existing classifications, the Official, the Southern and the Western, be consolidated into a single issue, the ratings in the different territories to be shown in parallel columns. This would not only facilitate matters for shippers, but would make more prominent the lack of uniformity, and thus tend to expedite the work of removing the existing differences.

The Baltimore & Ohio Railroad, in view of the pressing problem of feeding the fighting nations of Europe, and the danger of additional scarcity of labor on farms, has taken action to promote conservation of labor. Realizing the labor shortage on farms in its territory, and the increasing difficulties the company has established a farm labor bureau and employment agency, working in conjunction with the traffic department. A list is being compiled giving the name of each farmer on or near the road, the distance of his farm from the station; the number of acres devoted to each crop, including cereals, forage, vegetables and fruits; the amount of farm labor needed for the kind of work offered, and the dates when needed and the rates of pay per day. The road will make a special fare as an inducement to city men who cannot serve their country at the front, but who desire to aid in the food branch of the service.

Lumbermen Object to Car Service Rules

The special transportation committee of the National Lumber Manufacturers' Association in session at the annual convention of the association at Chicago on April 4 and 5, sent the following telegram to the car service commission of the American Railway Association:

"The car situation in lumber producing territory is extremely serious and measures adopted heretofore to effect relief have been unsuccessful. The present car service rules are ineffective from the standpoint of shippers and also work hardship on carriers. The transportation committee at a meeting here to-day respectfully urges the pooling of freight equipment, which we believe the only effective solution."

Increases in Taxes and Advances in Rates

W. D. Hines, chairman of the executive committee of the Atchison, Topeka & Santa Fe, addressed the Knife and Fork Club at Kansas City, Mo., on March 29. He said in part:

"The farmers and merchants and manufacturers of the West have suffered greatly in the past year on account of the congestion which has interfered with the distribution of cars, and which has prevented the free movement of freight. To an important extent that congestion has arisen from the fact that railroads on the Atlantic seaboard have not been able to incur the enormous cost of enlarging their terminal facilities so as to take care satisfactorily of all the loaded cars. Doubtless the question may occur to some of you, Why do the railroads talk so much about low rates? In every other field we find a tendency toward heavy increases in costs. Certainly the government makes no apologies for steadily increasing the taxes. It is a curious thing that the public accepts without a murmur the heaviest increases in taxes, and yet has shown, at least in the past, such a strong disposition to resist any increases in railroad rates."

Dissenting Opinion in Illinois Rate Case

Walter A. Shaw, member of the Illinois State Public Utilities Commission, has made public his dissenting opinion in the five per cent freight rate case recently decided. He advocates a horizontal increase of five cents a ton in coal rates in order to maintain present rate adjustments, and to preserve trade relations which have grown up at coal market centers. The majority decision in the case allowed a maximum increase of five per cent in coal rates. Mr. Shaw's statement reads in part as follows:

"It appears that coal mines in Illinois are grouped for rate-making purposes, and that the largest set of groups is in the Springfield district, which is approximately 160 miles in length and 60 miles in width. The rates from all mines in any of the groups to the principal Illinois markets are identical, regardless of mileage.

"It seems that, when the groups were established, the rates to Chicago and other principal consuming markets were fixed from the northern Illinois group as a controlling rate, and that the rates from all other Illinois groups to the same destinations were made by adding certain arbitraries to the existing northern Illinois group rate.

"Prior to 1896 there existed great dissatisfaction as to rates for transmission of coal, and, as a result, the whole question was submitted to arbitration, resulting in what is known as the 'Faithorn award,' made in the year 1896 after an extended investigation of all features of the coal mining and distribution industry.

"Freight rates fixed in the Faithorn compromise took into consideration not only freight differentials, but also the cost of coal in the different districts, the thickness of the coal veins, the heating value of the several coals, and many other elements of production costs.

"Interstate coal rates into Chicago now range from 57 cents for the northern Illinois group to \$1.05 for the southern Illinois group. An increase of 5 per cent, therefore, makes the range of increase vary from 2.8 cents for northern Illinois coal to 5¼ cents for southern Illinois coal.

"In view of the fact that a large portion of the coal is handled in Chicago by brokers on margins of a few cents a ton, it is quite probable that a disturbance of present differentials would create new and drastic conditions in the competitive coal market."

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The commission has suspended until August 7 proposed increased rates filed by R. H. Countiss on dried or evaporated fruits and vegetables from California to eastern points.

The commission has further suspended until October 14 an increased rate proposed by the Norfolk & Western on coke c.l. from the Pocahontas, Tug River and Clinch Valley districts to Lawrence, Ohio.

The commission has further suspended until October 14 tariffs filed by the El Paso & Southwestern naming increased commodity rates on coal in carloads from Dawson, N. M., to various destinations in the state of Texas.

The commission has suspended from April 8 to August 6 the operation of provisions of a Missouri Pacific tariff providing for the cancellation of rates on cement, c.l., from Iola and other Kansas producing points to destinations on the Chicago, Milwaukee & St. Paul in South Dakota.

The commission has suspended tariffs filed by the eastern railroads reducing the free time on coal shipments to tidewater, which were to become effective on April 10. The Pennsylvania Retail Coal Merchants' Association and the Anthracite Coal Operators' Association have filed protests with the commission.

The commission has suspended until August 3 the operation of increased rates filed by the St. Louis-San Francisco on lumber in carloads from various points of origin in Arkansas, Texas, Oklahoma and other cities to Thebes, Ill., Memphis, Tenn., and other destinations. Rates to Memphis are in some cases increased by as much as 5 cents per 100 pounds.

The commission has voted not to suspend tariffs naming increased rates on bituminous coal from mines in Pennsylvania, West Virginia, Ohio and other states to Lake Erie ports for transshipment by vessel, which will become effective on April 15 and later dates. Applications for suspension of local rates on bituminous coal from the mines to Buffalo, N. Y., and Buffalo rate points are still pending.

The commission has further suspended until October 14 tariffs providing for the withdrawal of joint through rates on bituminous coal from mines located on the Pittsburgh, Cincinnati, Chicago & St. Louis, and the Pittsburgh, Chartiers & Youghiogeny Railway in Pennsylvania and West Virginia to various destinations on the Erie, Lehigh Valley, Delaware, Lackawanna & Western, New York Central, West Shore and Delaware & Hudson.

Rates on Coal to Nashville, Tenn.

Traffic Bureau of Nashville v. Louisville & Nashville. Opinion by Commissioner Clark:

A rate on coal from western Kentucky mines on the Louisville & Nashville to Nashville, Tenn., increased from 80 cents to 90 cents per ton on February 16, 1916, is found not justified, and a rate of 80 cents per ton is prescribed as maximum for the future. Reparation awarded. (43 I. C. C., 366.)

Embargoes on Hay at New York

New York Hay Exchange Company v. New York Central. Opinion by Commissioner Meyer:

Because of the accumulation of hay in its warehouse in the city of New York, N. Y., the New York Central has found it necessary for many years to declare embargoes from time to time to relieve the congestion. That method having proved unsatisfactory the defendant recently adopted a new system, whereby shippers are required to present permits issued by defendant's agent in New York as a condition precedent to the acceptance of shipments. These permits are issued in the first instance to wholesale dealers in hay in New York, the number of permits which a dealer is entitled to receive depending upon the size of his business as indicated by his total receipts of hay during

three months selected by the defendant. Upon complaint alleging that the practice in question is unreasonable and discriminatory, and that it gives an undue preference to certain shippers, the commission holds that the practice is unlawful. (43 I. C. C., 281.)

Dairy Products

National Poultry, Butter and Egg Association v. Baltimore & Ohio Southwestern et al. Opinion by Commissioner Daniels:

Prior to March 20, 1915, official classification lines transported dairy products in refrigerator cars, under ice if necessary, at first-class rates for dressed poultry, second-class rates for butter and eggs, and third-class rates for cheese, in any quantity. On that date separate charges in addition to the class rates then obtaining were made effective for "ice and salt furnished" on car lots of 15,000 lb. or more, at the rate of \$2.50 per ton of ice supplied, and at a charge for "refrigeration on less-than-carload shipments" of less than 15,000 lb., of from 5 to 10 cents per 100 lb., varying with the amount of the applicable first-class rate of 100 lb. of load for which refrigerator car service, with or without ice, was furnished. The new charges were not suspended. The commissioner finds that the separately established charges of March 20, 1915, effected an increase in the aggregate rate; that the class rates prior to March 20, 1915, included compensation for the refrigeration and refrigerator car service now separately assessed; and that the propriety of the rates resulting in increased charges is not established of record. (43 I. C. C., 392.)

PERSONNEL OF COMMISSIONS

Daniel L. Turner, acting chief engineer of the New York State Public Service Commission, First District, has been appointed chief engineer; salary \$15,000 yearly. Alfred Craven, formerly chief engineer at a salary of \$20,000 a year, is now consulting engineer, at \$12,000.

Ernest A. Stewart, examiner, Interstate Commerce Commission, has resigned to open an office at Los Angeles, Cal., as transportation expert and traffic accountant. Mr. Stewart has been with the Interstate Commerce Commission since January, 1913. Prior to that time he was president of the Merchants' Traffic Association with office at Los Angeles; and before taking up work with that organization served in various capacities in the operating, accounting and traffic departments of the Chicago Great Western, the Mexican Central, the Southern Pacific and the Atchison, Topeka & Santa Fe, Coast Lines. He will handle matters pertaining to transportation before the Interstate Commerce Commission and the public utilities and state railroad commissions, as well as the United States Shipping Board for carriers and shippers.

COURT NEWS

"Approach to Bridge"

It is not easy to lay down an unfailing rule as to what is an approach to a bridge which the railroad company is obliged to maintain and what is not. The Minnesota Supreme Court holds that a public street, leading to a bridge on a 4 per cent grade, filled to its full width and at a height above abutting property, which permits the use of such property for ordinary business purposes at street level, susceptible of all the uses of a public street, with sidewalk, curbing and other street improvements, is not an "approach to the bridge," which the railroad company is forever bound to maintain and keep in surface repair.—*State v. Great Northern (Minn.)*, 161 N. W., 596. Decided February 23, 1917.

Collection of Freight Charges

The Circuit Court of Appeals, Fifth Circuit, holds that, though the carrier can, notwithstanding the usual clause of the bill of lading as to delivery to the consignee on payment of the freight, and regardless of the ownership of the goods, waive its lien and recover the freight charges from the consignor, where the carrier attempts to collect from the consignee, but through error collected only part of the amount due, and could thereafter have collected the balance from the consignee who owned the goods,

from other goods in its possession, it will be bound by its election to collect from the consignee and not permitted to sue the consignor for the balance.—*Yazoo & Mississippi Valley v. Zemurray*, 238 Fed., 789. Decided January 16, 1916. Rehearing denied February 27, 1917.

Pedestrians Crossing Railroad Bridge Held Trespassers

The Kentucky Court of Appeals holds that it is the established rule in that state that persons who use a railroad bridge for their own convenience are trespassers, and their status as such cannot be changed to that of licensees by the frequency and extent of such trespassing. A railroad bridge was without planking for foot passengers, and there was no place, except at the piers, where a pedestrian could stand and clear a passing train. Signs warned the public not to use the bridge. The court holds that the company could not be held to have acquiesced in the use of the bridge as a highway for pedestrians, and was not liable for the death of a person attempting to walk across it.—*McCoy v. Williamson & Pond Creek* (Ky.), 192 S. W. 45. Decided February 23, 1917.

Intoxicating Liquors—Prohibited Territory

In a prosecution against a carrier for violating the Kentucky statute by transporting into territory where the sale was prohibited liquor which was not intended by the consignee for his personal and family use, the Kentucky Court of Appeals holds that, as the carrier is not liable unless the statement that the liquor was intended for personal and family use was false, the carrier cannot be convicted, though its agent believed the statement was false, and an instruction to the jury so declaring was improper. The carrier is liable only if the statement was false and it knew or was charged with knowledge of facts which would have informed a reasonably prudent person that the statement was false.—*Adams Express Co. v. Commonwealth* (Ky.), 192 S. W. 56. Decided February 27, 1917.

Shipment "Freight Collect"—Liability of Consignor

Lumber was delivered to a carrier under a bill of lading, naming the consignee, and showing that the lumber was to be shipped "freight collect." The carrier tendered the lumber to the consignee, who refused to receive it or pay the freight charges after due notice. The consignor was within a reasonable time thereafter notified of this refusal, but took no steps to pay the freight charges or take care of the lumber. The carrier in conformity with law sold the goods to enforce its lien for charges, and there was still a balance due, for which it sued the consignor. The Texas Court of Civil Appeals held that the consignor was liable for such balance, since the liability of the consignor with whom a contract of shipment is made for the freight charges provided for therein exists regardless of whether or not the consignee is the owner, and irrespective of the failure of the carrier to collect freight from the consignee.—*Miller & Vidor Lumber Co. v. Atchison, T. & S. F. Co.* (Tex.), 192 S. W. 354. Decided January 12, 1917.

Stop, Look and Listen Rule—Louisiana

In an action for personal injuries and the destruction of an automobile, it appeared that the plaintiff was driving along a road parallel to the defendant's track; and, turning sharply at right angles into a crossing, he ran his car in front of a train; and the train could not be stopped. The automobile was in view of the engineman for a long distance; and he thought it would continue along the road. The necessary warnings were properly given, and he did what he could to avoid the accident. The Louisiana Supreme Court holds that "if a traveler fails to stop, look and listen before crossing a railroad track in the country, he is at fault; and he cannot recover damages because of a collision with a train on said track. . . . It was the duty of plaintiff, before crossing the track, to have stopped, looked and listened, and where it is shown that the view was unobstructed and the accident occurred in the day-time, it is clear that the train was in plain view of plaintiff for a sufficient length of time before the accident to have allowed him to realize its presence, and to have avoided the danger. . . . Even if the weeds had obstructed plaintiff's view, as he claims, his duty to stop, look and listen was the more incumbent upon him. . . . It is not possible for plaintiff to have taken the care which he

says he took on the day of the accident, and yet to have been struck by the train." Judgment for the plaintiff was reversed, and judgment for the defendant was directed.—*Perrin v. New Orleans Terminal* (La.), 74 So., 160. Rehearing denied January 15, 1917.

Right to Eject Passenger—Damages

In an action against the Illinois Central and the Mobile & Ohio, for wrongful ejection, both roads running trains out of the union station at Paducah, it appeared that the plaintiff held a ticket over the Illinois Central, but by misdirection of the joint employees of the roads, or of the employees of the wrong train, took passage on a Mobile & Ohio train. She was put down at a short distance from a town where ample accommodation for her comfort was provided and she could get a train on the proper road. The Kentucky Court of Appeals held that her ejection at that point was proper. As she did not suffer any personal injury or illness, she was not entitled to damages for mere fright or mental suffering. And as no time was lost and no additional expense was incurred, the damages, if any, should be confined to such a sum as would fairly compensate her for the inconvenience and discomfort which she suffered as the direct and proximate result of her ejection at an unsuitable place. *Mobile & Ohio v. Dill* (Ky.), 191 S. W., 80. Decided January 23, 1917.

Ticket Agents' Authority to Arrest Offenders

In an action against a railroad company for false arrest and malicious prosecution it appeared that the plaintiff, with a friend, went to the defendant's ticket office in Oklahoma City and bought tickets, giving as part payment a \$20 bill. They then went to their hotel, and while dining there two policemen appeared at the hotel with one of the ticket agents. The agent went into the dining room and accused the plaintiff of passing a counterfeit \$20 bill. The plaintiff protested that he did not know the bill was counterfeit, and gave another in its place. The agent then left, and soon after the police arrested the plaintiff for passing counterfeit money. He was afterwards released, on its being found that the bill, though somewhat unusual in appearance, was genuine. The Missouri Supreme Court holds that the railroad was not liable, the transaction between the railroad and the plaintiff having terminated before the arrest. A ticket agent, not appointed to detect and arrest offenders, has no such authority, except that implied from his duty to receive good money for tickets sold; and when this is accomplished, such authority ends.—*Sacks v. St. Louis & S. F.* (Mo.), 192 S. W. 418. Decided February 2, 1917.

Duty to Passengers Destined to Flag Stations

In an action for damages to a man and his wife resulting from being carried past their destination, a flag station, and having to walk back, the Arkansas Supreme Court, citing several prior Arkansas cases on the point, holds that the purchase of a ticket from a station agent entitling a passenger to be carried to a flag station is not notice to the conductor that the passenger had such a ticket. But where railroad companies require passengers before entering the train to exhibit their tickets to men in charge of the particular train on which passengers intend to embark, this is notice to the conductor, and the railroad will be liable for carrying passengers beyond their destination because of the conductor's failure to take up tickets and stop the train at the flag station. Where, however, the passenger is not required to thus exhibit his ticket, then the railroad has no notice of such ticket until it is exhibited to the man whose duty it is to lift or check the tickets. In the present case the evidence showed that passengers were supposed to show their tickets when getting on at ticket stations, and the railroad was held liable. The plaintiffs had to walk back about 4 miles to their destination. The jury awarded the man, who had carried two large suit cases, \$25, and his wife, who had testified that the walk caused her to be sick in bed for a week, \$200. On appeal, the Arkansas Supreme Court held that the \$25 to the man was ample, and reduced the damages to his wife to \$100. The court said that "the jurors in such cases should not indulge in speculations and award imaginary damages, but should assess the amount at what they believe under the evidence to be actual compensation for the injuries sustained."—*Rock Island v. Blundell* (Ark.), 191 S. W., 940. Decided January 22, 1917.

Railway Officers

Executive, Financial, Legal and Accounting

M. E. Moody, assistant auditor and claim agent of the Interstate Railroad, has been appointed auditor with office at Big Stone Gap, Va., vice F. L. Lilley resigned.

L. D. Lacy, chief clerk to the controller of the Chesapeake & Ohio, at Richmond, Va., has been appointed auditor of passenger traffic, with headquarters at Richmond, succeeding I. D. Briggs, Jr., deceased.

William Hepburn Bremner, general solicitor for the Minneapolis & St. Louis, at Minneapolis, Minn., has been elected acting president, succeeding E. L. Brown, resigned on account of continued ill health.

Ben L. Allen, who has been appointed superintendent and treasurer of the Colorado, Kansas & Oklahoma, with office at Scott City, Kan., as announced in these columns on March 23, was born at Oregon, Mo., on March 19, 1871. In March, 1889, he entered railway service as a rodman on the Rio Grande Southern. From January, 1892, to January, 1896, he was county surveyor for Logan county, Kan., and spent the following three years in the employ of various small lines in Colorado as instrumentman and resident engineer. From 1901 to 1907 he was with the St. Louis-San Francisco, first as resident engineer and then as locating engineer at various points along the line in Oklahoma and Texas. In 1908 he was again elected county surveyor of Logan county, Kan., and in 1910 was appointed chief engineer of the Colorado, Kansas & Oklahoma, which position he continued to fill up to the time of his appointment, as noted above. He succeeds F. S. Yantis, assigned to other duties.

Operating

The position of G. H. Gilmer, assistant superintendent at Stonega, Va., of the Interstate Railroad, has been abolished.

D. R. Crowley has been appointed terminal trainmaster of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio.

G. H. Westcott, general freight and passenger agent of the Copper Range at Houghton, Mich., has been appointed also car accountant.

F. R. Kennedy has been appointed assistant superintendent of the St. Louis-San Francisco, with headquarters at Sapulpa, Okla., succeeding O. G. Cox, assigned to other duties.

W. S. Campbell has been appointed manager and chief engineer of the Kentucky & Indiana Terminal Railroad with office at Louisville, Ky., vice J. H. Rightmeyer, resigned.

M. A. Welsh has been appointed superintendent of the Waterloo, Cedar Falls & Northern at Waterloo, Iowa, succeeding O. S. Lamb, resigned to accept service with another company.

George A. Dennis has been appointed manager of the Nickel Plate-Lackawanna Dairy Line, with office at Chicago, Ill., succeeding H. H. Brigham, resigned to go into other business.

W. Tansley, assistant superintendent of the Canadian Pacific at London, Ont., has been appointed superintendent of the Laurentian division, with office at Montreal, Que., in place of H. J. Humphrey, transferred.

C. H. Buford, engineer of track elevation on the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, Ill., has been appointed trainmaster of the Sioux City and Dakota division, with headquarters at Sioux City, Ia.

C. L. Harris, assistant superintendent of the Canadian Northern lines east of Port Arthur at Rosedale, Ont., has been appointed superintendent of the Toronto district, with jurisdiction over Rideau, Trenton, Muskoka and Orillia subdivisions and Toronto terminals with headquarters at Rosedale. John Irwin, superintendent at Trenton, has been appointed superintendent of the Toronto district, with jurisdiction over Picton, Maynooth,

Irondale, Tweed and Brockville subdivisions, with headquarters at Trenton.

Victor Wierman, superintendent of the Trenton division of the Pennsylvania Railroad, has been transferred to the office of the general superintendent of the New Jersey division at New York City; E. J. Cleave, superintendent of the Cresson division, at Cresson, Pa., has been appointed superintendent of the Trenton division, with headquarters at Trenton, N. J., to succeed Mr. Wierman; F. W. Smith, Jr., assistant superintendent of the New York division, has been appointed superintendent of the Cresson division; J. M. Henry, assistant superintendent of the Pittsburgh division, has been appointed assistant superintendent of the New York division; and J. B. Hutchinson, Jr., division engineer of the Pittsburgh division, has been appointed assistant superintendent of the same division. Effective April 15.

W. M. Haver, whose appointment as superintendent of the Wheeling division of the Baltimore & Ohio with office at Wheeling, W. Va., has already been announced in these columns, was



W. M. Haver

born at Willoughby, Ohio, on Dec. 5, 1866, and was educated in the public schools and high schools of Collinwood and Collamer, Ohio. He began railway work in December, 1886, as a locomotive fireman on the Lake Shore & Michigan Southern and was promoted to locomotive engineman in 1890. He subsequently served on the Lehigh Valley, the Illinois Central and the Louisville & Nashville in the same capacity. In November, 1901, he went to the Baltimore & Ohio as an engineman and for a while was employed on special air brake work.

In September, 1910, he was promoted to assistant road foreman of engines at New Martinsville, W. Va., and soon afterwards was appointed assistant trainmaster of the Newark division. On Sept. 20, 1913, he was appointed trainmaster of the Monongah division, and in January, 1915, he was made supervisor of freight transportation at Baltimore, Md. He subsequently served as terminal trainmaster at Wheeling, and on Jan. 10, 1917, was promoted to assistant superintendent at Pittsburgh, which position he held until his recent appointment as superintendent of the same road as above noted.

Traffic

A. D. Phillips, general eastern agent of the Western Maryland at New York, has resigned to become traffic manager of the Fisk Rubber Company, Chicopee Falls, Mass.

H. L. Peters, soliciting freight agent of the Georgia Southern & Florida at Tampa, Fla., has been appointed commercial agent, with office at Valdosta, Ga., vice D. W. Agnew, resigned to accept service with another company.

George E. Schnitzer has been appointed assistant general freight agent of the Chicago, Rock Island & Pacific, with office at Little Rock, Ark., vice J. E. Johanson, general freight agent, resigned to accept other service.

H. H. Brigham, general manager of the Nickel Plate-Lackawanna Dairy Line, with office at Chicago, Ill., has resigned to give all his attention in future to his duties as president of the North American Car Company and the Atlantic Seaboard Dispatch.

W. E. Creamer, westbound agent of the Wabash at Kansas City, Mo., has been promoted to division freight and passenger agent, with office at Des Moines, Iowa, succeeding A. A. McKowen, transferred to other duties. L. C. Hodkins, traveling freight agent at Kansas City, Mo., succeeding Mr. Creamer.

C. P. Fegan, district passenger and ticket agent of the Texas & Pacific at Dallas, Tex., has resigned to enter military service in

the quartermaster's department. He will be succeeded as district passenger agent at Dallas by Clarence Jones, now city passenger and ticket agent with the title of acting district passenger and ticket agent.

B. M. Scott has been appointed general agent of the traffic department of the Los Angeles & Salt Lake, with office at Long Beach, Cal.; Howard Truslow, passenger and freight agent at Santa Barbara, has been appointed commercial agent at Santa Barbara, and J. J. Tavis, city passenger and freight agent at Santa Ana, Cal., has been appointed commercial agent at Santa Ana.

John F. Sullivan, traveling passenger agent of the Southern Pacific lines in Texas, whose appointment as assistant general passenger agent of these lines, with office at Houston, Texas, was announced in these columns two weeks ago, was born at Cincinnati, Ohio, July 27, 1879. After leaving high school he entered railway service with the Texas & New Orleans as a clerk and stenographer in the superintendent's office at Houston, Texas, in August, 1899. In March, 1910 he was appointed ticket agent of the Louisiana Western at Lake Charles, La., and on July 1, 1903, was advanced to city passenger and ticket agent of the Southern Pacific, Texas lines at Houston. From April, 1908, to October, 1910, he was traveling passenger agent for the Louisiana & Northern at Houston, and was then appointed traveling passenger agent for all the Southern Pacific lines in Texas with the same headquarters, which latter position he continued to hold until April 1, 1917, when his present appointment as assistant general passenger agent became effective. He succeeds John T. Monroe, promoted.

Joseph Hellen, whose appointment as general passenger agent of the Southern Pacific, Texas Lines, with headquarters at Houston, Tex., was announced in these columns two weeks ago, was born at Mobile, Ala., June 1, 1866. He first entered railway service with the Mobile & Ohio as a clerk in the purchasing department in March, 1886, and the following year went to the Southern Pacific as a clerk in the auditor's office at New Orleans, La. In October, 1894, he was appointed chief clerk of passenger accounts in this same office and in September, 1896, became chief clerk of the passenger department of this company's Texas lines at Houston. From June, 1903, to February, 1906, he was assistant general passenger agent with the same headquarters, being then appointed general passenger agent of the Texas & New Orleans. On January, 1912, he was promoted to assistant general passenger agent of all Southern Pacific lines in Texas and held this position until January 1, 1916, when he was advanced to general passenger agent of this company's lines in Louisiana, with headquarters at New Orleans. He now becomes general passenger agent of the Southern Pacific lines in Texas, succeeding J. H. R. Parsons, promoted.



J. F. Sullivan



J. Hellen

Engineering and Rolling Stock

P. E. Bast, fuel inspector of the Delaware & Hudson at Colonie, N. Y., has been appointed fuel agent, with office at Albany, N. Y.

Daniel Preston Kellogg has been appointed superintendent of motive power for the Southern Pacific, with headquarters at Sacramento, Cal., as announced in these columns two weeks ago. He was born at Alliance, Ohio, April 17, 1869. In June, 1889, he entered railway service as a machinist's apprentice with the Missouri Pacific in Kansas. During 1892 he was engaged in installing machinery in contract shops in Utah and the following year was appointed roundhouse foreman for the Chicago, Milwaukee & St. Paul in Wisconsin. From 1896 to 1897 and during part of 1898 he was assistant general foreman of the Duluth & Iron Range at Two Harbors, Minn., being then appointed air brake inspector for the Southern Pacific at Oakland, Cal. In the latter part of 1898 he was promoted to general foreman of locomotives for this same company, and in 1904 was transferred to Bakersfield, Cal., with the title of master mechanic. From 1906 to 1910 he was master mechanic at Los Angeles, Cal., and he was then advanced to superintendent of shops with the same headquarters, which latter position he continued to fill up to March 1, 1917, when his present appointment as noted above became effective.



D. P. Kellogg

C. C. Cook, whose appointment as district engineer maintenance of way, of the West Virginia district of the Baltimore & Ohio, with headquarters at Wheeling, W. Va., has already been announced in these columns, entered the service of the Baltimore & Ohio on May 9, 1900, in the engineering department as a chainman at Grafton, W. Va. He subsequently served as levelman and transitman until June, 1903, and then as assistant resident engineer and field engineer on construction and surveys at Pittsburgh and Baltimore. From December, 1905, to August, 1909, he was chief draftsman on surveys, in the chief engineer's department at Baltimore and at Morgantown, W. Va., and then was assistant engineer maintenance of way at Cincinnati, Ohio, until September, 1910, when he was transferred in the same capacity to Baltimore, Md. In November, 1911, he was appointed division engineer, at Philadelphia, Pa., and in May, 1913, was transferred in the same capacity to Pittsburgh, which position he held at the time of his recent appointment as district engineer maintenance of way of the West Virginia district of the same road, as above noted.



C. C. Cook

H. S. Russell, division engineer of the Middle division of the Pennsylvania Railroad at Altoona, Pa., has been appointed division engineer of the Pittsburgh division; C. E. Brinser, division engineer of the Monongahela division, has been appointed division engineer of the Middle division; T. J. Skillman, division engineer of the Camden Terminal and the West Jersey & Sea-

shore Railroad, has been appointed division engineer of the Monongahela division; D. T. Easby, division engineer of the Allegheny division, has been transferred to the position of division engineer of the Camden Terminal and West Jersey & Seashore Railroad; and J. O. Hackenberg, supervisor of the Pittsburgh division at East Liberty, Pa., has been promoted to division engineer of the Allegheny division. Effective April 15.

H. H. Harsh, division engineer maintenance of way, of the Baltimore & Ohio, at Garrett, Ind., has been appointed division engineer with office at Pittsburgh, Pa.

C. C. Cunningham, roadmaster of the Chicago, Rock Island & Pacific at Liberal, Kan., has been appointed division engineer, with office at Dalhart, Tex., succeeding A. J. Wise, resigned.

J. H. Charlton, formerly assistant engineer of the Virginian, has been appointed chief engineer of the Boyne City, Gaylord & Alpena, with headquarters at Boyne City, Mich., succeeding M. G. Gates, resigned.

C. F. Burrell, engineer and roadmaster of the Kentucky & Indiana Terminal Railroad at Louisville, Ky., has been appointed engineer maintenance of way, and James McDonald has been appointed roadmaster. The office of engineer and roadmaster has been abolished.

Purchasing

Don B. Sebastian, fuel agent of the Chicago, Rock Island & Pacific, has resigned to become associated with the Bickett Coal & Coke Company, Chicago, Ill. Mr. Sebastian will be elected a vice-president of the company at its next annual meeting.

Frank S. Austin, who has been appointed general storekeeper of the Boston & Albany, with headquarters at West Springfield, Mass., as has already been announced in these columns, was born on November 6, 1886, at Lynn, Mass. He attended Ingalls Grammar School, also the English High School of his native city and graduated from Dartmouth College in 1909. The same year he began railway work with the Boston & Albany, and has been in the continuous service of that road ever since. He served as assistant to the supervisor of track at Pittsfield, Mass., until 1911, and then for two years in the same capacity at Springfield. In 1913 he was appointed supervisor of track at Worcester, and three years later became supervisor of track at Boston, which position he held at the time of his recent appointment as general storekeeper of the same road, as above noted.

OBITUARY

Holman D. Waldron, for the past six years general passenger agent of the Maine Central, with headquarters at Portland, Me., died on April 9. He was born in June, 1857, at Portland, and began work in 1877 as telegraph operator and ticket agent with the Maine Central, and had been in the continuous service of that road up to the time of his death.

Erastus Young, formerly general auditor of the Union Pacific System under the Harriman regime, died at his home in Omaha, Neb., April 4, after a brief illness, age 77 years. He was born in Rockland county, N. Y., June 17, 1839, and received his education at the Williston Seminary at East Hampton, Mass. On April 1, 1870, he entered railway service as a cashier and general accountant for the New Orleans, Mobile & Chattanooga. In 1872 he was appointed auditor for this road and in 1876 became auditor for the St. Louis & Southeastern with office at St. Louis, Mo. He was auditor for the Atchison, Topeka & Santa Fe during 1880 and in 1881 assumed the same position with the New York & New England. From July, 1883 to January 1, 1898 he was auditor of the Union Pacific and in February, 1898 was promoted to general auditor for the entire system. In January, 1902 he also became general auditor of the Southern Pacific system, together with the Chicago & Alton and the Pacific Mail Steamship Company, maintaining headquarters at Omaha, Neb. He was a member of the general committee of 25 and the sub-committee of seven members of the American Association of Railway Accounting Officers, which prepared the system of railway accounts adopted by the Interstate Commerce Commission and he also prepared the classification of accounts adopted by the commission. He retired from active railway work on January 1, 1910.

Equipment and Supplies

LOCOMOTIVES

THE CHICAGO & EASTERN ILLINOIS, reported in last week's issue as inquiring for locomotives, has ordered 7 Santa Fe type locomotives from the Baldwin Locomotive Works.

THE UTAH RAILROAD, now operated by the Denver & Rio Grande, will shortly become an independent property, at which time it will come into the market for four Mallet type locomotives.

THE EL PASO & SOUTHWESTERN has ordered 5 Mikado locomotives from the American Locomotive Company. These engines will have 29 by 30-in. cylinders, a total weight in working order of 321,000 lb., and will be equipped with superheaters.

THE CANADIAN GOVERNMENT RAILWAYS have ordered 30 Mikado, 10 Pacific and 10 Santa Fe type locomotives from the American Locomotive Company. The Mikado locomotives will have 27 by 30-in. cylinders, and a total weight in working order of 288,000 lb. The Pacific type engines will have 23½ by 28-in. cylinders, and will weigh 248,000 lb. The Santa Fe type locomotives will have 26 by 32-in. cylinders and a weight of 320,000 lb. All 50 locomotives will be equipped with superheaters.

FREIGHT CARS

THE LEHIGH PORTLAND CEMENT COMPANY is reported in the market for 50 gondola cars.

THE CALUMET & HECLA MINING COMPANY has ordered 50 40-ton rock cars from the American Car & Foundry Company.

THE DULUTH & IRON RANGE has revived its inquiry for 50 gondola, 25 box and 25 flat cars. It will also build 10 refrigerator cars in its own shops.

THE INDIAN REFINING COMPANY, reported in the *Railway Age Gazette* of March 30 as being in the market for 75 tank cars, has ordered 9 6,000-gal. capacity tank cars from the Chicago Steel Car Company, and 15 6,000-gal. capacity and 60 8,000-gal. capacity tank cars from the Standard Car Construction Company.

IRON AND STEEL

THE PENNSYLVANIA RAILROAD has ordered 150 tons of steel from L. F. Shoemaker & Co.

THE CHICAGO GREAT WESTERN has ordered 154 tons of bridge spans and beams from the American Bridge Company.

THE NEW YORK CENTRAL has ordered 700 tons of steel from L. F. Shoemaker & Co. and 800 tons from other companies for a grade crossing elimination problem.

MACHINERY AND TOOLS

THE ATLANTIC COAST LINE is reported as about to enter the market for about 25 machine tools.

TRACK SPECIALTIES

THE ILLINOIS CENTRAL has just placed an order with the Sellers Manufacturing Company, Chicago, Ill., for 25,000 tons of tie plates. Delivery is to be extended over 18 months, beginning July 1, 1917.

MISCELLANEOUS

THE PENNSYLVANIA LINES WEST OF PITTSBURGH have awarded a contract to the Roberts & Schaefer Company, Chicago, for the designing and building of a reinforced concrete, three-track automatic electric locomotive coaling plant, and also a reinforced concrete "RandS" gravity sand plant, which will be built at the new terminal now under construction at Akron, Ohio.

Supply Trade News

Henry Schoonmaker, secretary of the American Bridge Company, with which he had been connected since its formation, died from pneumonia April 9, in Brooklyn, N. Y., aged 61 years.

H. F. Bigler, Jr., has been transferred to the railway department of the A. M. Byers Company, Pittsburgh, Pa., and from now on will devote all of his time to railway work, assisting S. P. Broome.

H. S. Mikesell, assistant manager, mining department of the Chicago, Rock Island & Pacific, has resigned to become vice-president and treasurer of Mikesell Brothers, Chicago, Ill., manufacturers of asbestos lining, packings and brake linings.

Carlisle P. Winslow, assistant to the director of the United States Forest Products Laboratory, Madison, Wis., has been appointed director to succeed Howard F. Weiss, who resigned on April 1 to become connected with a commercial engineering firm at Madison, Wis.

George C. Fisk, formerly and for many years president of the Wason Manufacturing Company, of Springfield, Mass., died at his home in Springfield on April 6, at the age of 86. Mr. Fisk began work for the Wason Manufacturing Company about 1852 as bookkeeper, and became president in 1870. This company was absorbed in 1907 by the J. G. Brill Company, of Philadelphia.

J. W. Kelker, whose appointment to the position of Mechanical engineer of the Pilliod Company was announced in last week's issue, was born October 12, 1882, at Denver, Col. He was educated in the public schools of that city, and entered railroad service August 24, 1898, as a messenger to the superintendent of motive power of the Denver & Rio Grande at Denver. On December 4, 1899, he was made a machinist and drafting apprentice in the locomotive department, serving until February 16, 1903, at which time he left railroad service to enter the employ of the American Locomotive Company, at Dunkirk, N. Y., as locomotive draftsman. On July 7, 1907, he was transferred to the general drawing room at Schenectady as assistant engineer, and it is this position he leaves to take up his new duties as mechanical engineer of the Pilliod Company.



J. W. Kelker

New Steel Corporation Unfilled Tonnage Record

Unfilled orders on the books of the United States Steel Corporation on March 31 totaled 11,711,644 tons, which is a new high record, and represents an increase of 134,947 tons over business on the company's books at the close of February. March 31, 1916, unfilled orders of the Steel Corporation were 9,331,000 tons, and two years ago 4,255,749 tons.

TRADE PUBLICATIONS

AIR BRAKE EQUIPMENT.—The Westinghouse Air Brake Company has recently issued special publication No. 9021, on "Extra Quality Pipe Fittings for Railroad Air Brake Service." This is a high grade, carefully prepared booklet, which emphasizes the better air brake service and saving of money made possible to railroads by the use of reliable pipe fittings in all air brake work on locomotives and cars.

Railway Construction

CHICAGO, BURLINGTON & QUINCY.—This company will build about 24 miles of second track between Litchfield, Ill., and Virden during the present year at an approximate cost of \$375,000. The work will be done by company forces.

GREEN BAY & EASTERN.—A certificate of public convenience and necessity has been granted this company by the Railroad Commission of Wisconsin to construct a line from Green Bay through Shirley, Lark, Wayside, Menchelville, Kellnerville, Manitowoc, Silver Lake, English Lake, St. Nazianz, School Hill, Mission House, Howard's Grove and Sheboygan, a distance of about 80 miles. Surveys have already been completed, and contracts for grading are expected to be let in the near future.

MANNING, MANDAN & FRED.—This company has been organized to build a steam road connecting the North Dakota towns of Manning, Emerson, Marshall, Center, Mandan, St. Anthony and Freda, a distance of about 136 miles. The plans provide for junctions with the Northern Pacific at Mandan, and with the Chicago, Milwaukee & St. Paul at Freda and also with a possible spur across the new bridge at Bismarck to connect with the Minneapolis, St. Paul & Sault Ste Marie at that point. No contracts have as yet been awarded.

NORTHERN PACIFIC.—This company has authorized the building of a branch line between Cowiche, Wash., and Tieton City, a distance of 6½ miles. The cost is estimated at \$224,271.

ORLEANS-KENNER ELECTRIC.—An officer writes regarding the report that an extension is to be built from Kenner, La., west to Rost, about 6 miles, that the work will not be carried out for several months.

PANHANDLE & WESTERN.—This company has been granted a charter to construct a new steam railroad through Texas and Cimarron counties, Okla., to Mineral, a distance of about 100 miles. The project is still in preliminary stages.

SHIP CHANNEL TRANSPORTATION COMPANY (ELECTRIC).—This company has been organized to build a standard gage interurban from Houston, Tex., to the Goose creek oil fields, a distance of about 29 miles. Plans are as yet in a preliminary stage, but work is expected to be pushed forward rapidly as soon as some difficulties have been overcome with regard to right of way.

SOUTHERN RAILWAY.—Contracts were let recently in six sections of from 5.8 miles to 18 miles each in length, for grading for double track on 71.5 miles between Charlotte, N. C. and Mt. Zion, S. C. This is the only part of the line not already in service as double track or under construction between Washington, D. C., and Atlanta, Ga., 649 miles. Double track is now in service on 477.5 miles and construction is under way on 100 miles and soon will be started on the remaining 71.5 miles.

TEMISKAMING & NORTHERN ONTARIO.—This company has surveys made for a branch line to be built from Swastika, Ont., to Kirkland Lake Gold Mining Camp, six miles.

RAILWAY STRUCTURES

BEARDSTOWN, ILL.—The Chicago, Burlington & Quincy will make an expenditure of \$150,000 during the next few months to improve its terminal facilities at this point. Among the improvements contemplated are extensions to the present roundhouse, a few minor shop buildings and additional track facilities. The work will be done by company forces.

DE LAND, FLA.—The Atlantic Coast Line will build a new brick and stucco passenger station at De Land. The plans for this improvement have not yet been approved.

HAZLETON, PA.—The Pennsylvania Railroad will build a freight station at Hazleton. It is to be one story high 37 ft. by 160 ft., and will have concrete foundations, brick walls, concrete floor, steel rolling doors and built-up roof.

NEW BRUNSWICK, N. J.—The Pennsylvania Railroad will build a combined freight house and office building at New Bruns-

wick. The freight station is to be one story high, 40 ft. by 260 ft.; it will have concrete foundations and brick walls. A second story 40 ft. by 49 ft. is to be built at one end of the freight station for office use.

NEW YORK.—The New York Public Service Commission, First District, has approved the plans and specifications for the new station for the Putnam division of the New York Central, to be built jointly by the New York Central and the Interborough Rapid Transit Company. The station is to be built at a point west of Sedgwick avenue, between One hundred and sixty-first and One hundred and sixty-second streets in the borough of the Bronx, and will cost \$32,067.

NORTH WHITE PLAINS, N. Y.—The New York Central has given a contract to G. L. Beebe, Utica, N. Y., to build a five-stall brick roundhouse with machine shop at one end. The stalls will be 90 ft. long; the machine shop will be 12 ft. wide in front and 56 ft. wide in the rear, and 62 ft. long.

PHILADELPHIA, PA.—The Pennsylvania Railroad has given a contract to F. A. Havens, Philadelphia, to build a passenger station, also platforms and shelters, at Chelton avenue, on the Chestnut Hill branch.

PROVO, UTAH.—The Utah Railway will spend about \$75,000 at this point within the next few months for a steel water tank, a four-stall enginehouse, a cinder pit, a 200-ton coal bin and a 100-ft. turnable.

ROANOKE, VA.—The Norfolk & Western has given a contract to John P. Pettyjohn & Co. for building the following facilities at Roanoke: A brick and steel freight house, 740 ft. by 50 ft., one story high; a brick freight office building, 140 ft. by 50 ft. one main story with basement floor; two covered transfer platforms, 18 ft. by 800 ft., and two 18 ft. by 350 ft. The buildings will be of semi-fireproof construction. Additional storage tracks, paved driveways, with sheds over the team and track delivery sides, will also be provided.

ROCKAWAY PARK, N. Y.—The Long Island Railroad has given a contract to the Frank J. Felgenhauer Company for building a new station at Rockaway Park.

STARBUCK, WASH.—Plans outlined by the engineering department of the Union Pacific, provide for the filling of four-pile trestles between this point and Pendleton. This work will be done during the summer by company forces. About 540,000 cu. yd. of earth will be required.

TIMMINS, ONT.—Bids may be asked for at an early date by the Temiskaming & Northern Ontario, for improvements to provide additional passenger and freight facilities at Timmins. Plans for this work have not yet been completed.

WORCESTER, MASS.—The New York, New Haven & Hartford is building a one span deck girder bridge 80 ft. 6 in. long to carry single track over Cambridge street, Worcester. The railroad company will carry out the foundation work and the American Bridge Company, New York, will fabricate and erect the steel superstructure.

JAPANESE COMMERCIAL AND INDUSTRIAL COMMISSIONERS.—According to the London and China Telegraph, the Japanese government has decided to create the office of Commercial and Industrial Commissioners in the Foreign Office. These commissioners will be stationed at various important cities and towns in foreign countries and engage in investigations mainly into commercial and industrial conditions in the countries where they are stationed, with a view to furnishing Japanese commercial and industrial circles with knowledge and information concerning commerce and industry, making tours of inspection to various districts in case of necessity. To begin with, five commissioners will be appointed with the opening of the new fiscal year, commencing April, 1917, and will be stationed at London, New York, Shanghai, in South America and in the South Sea Islands. The commissioners will be appointed from among able men in commercial and industrial circles, as their function is purely commercial and industrial, having no connection with diplomatic or political affairs. The former commercial commissioners had been attached to the Department of Commerce and Agriculture.

Railway Financial News

ERIE.—At this company's annual meeting a resolution was presented to the effect that as dividends have been earned on the preferred stock for several years past, the directors be requested to declare within 30 days dividends on both preferred issues in such proportions as are warranted, provided the same shall have been earned. The management's proxies were not voted for or against the resolution, but President Underwood promised to lay it before the board at the meeting scheduled for April 23. B. A. Eckhart was elected a director to succeed George W. Perkins.

NEW YORK CENTRAL.—This company has applied to the New York Public Service Commission for authority to issue \$10,000,000 refunding and improvement mortgage bonds to bear 4½ per cent interest, and to be disposed of at not less than 93½ net to the company. These bonds are to be issued under the company's large blanket mortgage executed early in 1914 for the refunding of existing debt as it matures, and to provide for all future bond issues for improvements and acquisitions.

The New York State Appellate Division of the Supreme Court, Second district, has sustained a decision of Supreme Court Justice Morschauer, dismissing the suit brought by Clarence H. Venner for an injunction to restrain the merger of the New York Central & Hudson River, the Lake Shore & Michigan Southern and nine other subsidiary concerns into the present New York Central Railroad Company.

NEW YORK, NEW HAVEN & HARTFORD.—The Government has brought suit in the United States District Court at Hartford to recover \$101,992 because of non-payment of certain portions of the road's federal income tax for the years 1910, 1911 and 1912.

PERE MARQUETTE.—Organization of the new company, the Pere Marquette Railway Company, was completed at a meeting in New York April 11, and E. N. Brown, formerly president of the National Railways of Mexico, was elected chairman. Frank H. Alfred, of Detroit, general manager for the receivers, was made president and general manager. John L. Cramer, of Detroit, is secretary and treasurer; E. M. Hebert, of New York, assistant secretary; W. E. Martin, of New York, assistant treasurer, and C. S. Sikes, of Detroit, general auditor. The new company took over the affairs of the road as of April 1. The directors are E. N. Brown, L. F. Loree, William H. Porter, Franklin Q. Brown, Beekman Winthrop, Frederick Strauss, Charles D. Lithgow, Frank H. Alfred, S. T. Crapo, F. W. Stevens, John A. Spoor, Francis R. Hart, Robert Windsor, Eugene V. R. Thayer and John W. Steadman.

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—At the first annual meeting of the recently formed Pittsburgh, Cincinnati, Chicago & St. Louis Railroad, the following directors were elected: For term ending April, 1918—G. L. Peck, W. H. Barnes, Samuel S. Dennis, A. M. Schoyer, W. H. Lee. Term ending April, 1919—J. D. Oliver, John P. Green, C. Stuart Patterson, J. J. Turner, Effingham B. Morris. Term ending April, 1920—D. T. McCabe, W. S. Rowe, T. DeW. Cuyler, Samuel Rea, Edward B. Taylor.

TENNESSEE CENTRAL.—No bid was offered for this road at the second attempt to sell it at auction. The upset price fixed by the federal court was \$700,000, having been reduced to this figure from \$1,350,000. A third attempt will be made to sell the property on May 3, at Nashville.

USE OF AUGER BITS IN CHILE.—The only use to which steel auger bits for hard woods are put in this section is to bore holes in railway ties. The railways still use the English system of using screw spikes to fasten down the rails, instead of the driven spikes used on American railways. The use of very hard woods makes the use of the best possible augers advisable.—*Commerce Report.*

ANNUAL REPORTS

CHICAGO AND NORTH WESTERN RAILWAY COMPANY

REPORT OF THE BOARD OF DIRECTORS

To the Stockholders of the Chicago and North Western Railway Company:

The Board of Directors submit herewith their report of the operations and affairs of the Chicago and North Western Railway Company for the year ending December 31, 1916.

Average number of miles operated, 8,107.82.

OPERATING REVENUES:

Freight	\$65,380,164.97
Passenger	22,329,509.32
Other Transportation	7,968,126.38
Incidental	2,301,043.03

Total Operating Revenues	\$97,978,843.70
OPERATING EXPENSES (66.46 per cent. of Operating Revenues)	65,120,827.01

Net Revenue from Railway Operations	\$32,858,016.69
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RAILWAY TAX ACCRUALS (5.12 per cent. of Operating Revenues)	\$5,016,527.44
UNCOLLECTIBLE RAILWAY REVENUES	5,758.60

	5,022,286.04
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Railway Operating Income	\$27,835,730.65
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NONOPERATING INCOME:	
Rental Income	\$676,106.88
Dividend Income	1,547,632.00
Income from Funded Securities	6,032.63
Income from Unfunded Securities and Accounts, and Other Items	729,401.91

Total Nonoperating Income	2,959,173.42
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Gross Income	\$30,794,904.07
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DEDUCTIONS FROM GROSS INCOME:	
Rental Payments	\$925,225.86
Interest on Funded Debt	9,368,308.82
Other Deductions	132,445.03

Total Deductions from Gross Income	10,425,979.71
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Net Income	\$20,368,924.36
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DISPOSITION OF NET INCOME:	
Sinking Funds	\$199,574.82
Dividends—	
8% on Preferred Stock	1,791,600.00
7% on Common Stock	9,108,015.00

Total Appropriations	11,099,189.82
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Balance Income for the year	\$ 9,269,734.54
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The operating results as compared with the preceding calendar year were as follows:

Freight Revenue increased	\$10,865,936.20
Passenger Revenue increased	1,793,110.49
Other Transportation Revenue increased	1,097,463.50
Incidental Revenue increased	467,886.35

Total Operating Revenues increased	\$14,224,396.54
Operating Expenses increased	8,058,251.93

Net Revenue from Railway Operations increased	\$ 6,166,144.61
Railway Tax Accruals increased	\$439,584.34
Uncollectible Railway Revenues decreased	9,402.98

	430,181.36
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Railway Operating Income increased	\$ 5,735,963.25
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Of the Operating Expenses for the current year \$38,624,721.42, or 59.31 per cent., was paid employees for Labor, as compared with \$33,252,631.57, or 58.27 per cent., paid during the preceding calendar year. The increase of \$5,372,089.85 in the amount paid is accounted for as follows:

Increase account more time worked	\$3,609,456.07
Increase account higher rates of compensation	1,762,633.78

	\$5,372,089.85
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MILES OF RAILROAD

The total number of miles of railroad owned December 31, 1916, was	7,946.13 miles
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In addition to which the company operated:

THROUGH OWNERSHIP OF ENTIRE CAPITAL STOCK—	
Wolf River Valley Railway (Junction east of Elton to Van Ostrand, Wis.)	1.98 "

UNDER LEASE—

De Pue, Ladd & Eastern Railroad (Ladd to Seatonville, Ill.)	3.25 miles
Belle Fourche Valley Railway (Belle Fourche to Newell, S. D.)	23.52 "
James River Valley and North Western Railway (Blunt to Gettysburg, S. D.)	39.55 "
Macoupin County Extension Railway (Benld to Staunton, Ill.)	4.36 "
Iowa Southern Railway (Miami to Consol, Iowa)	12.25 "

UNDER TRackage RIGHTS—

Peoria & Pekin Union Railway (in the City of Peoria, Ill.)	2.02 "
New York Central Railroad (Churchill to Ladd, Ill.)	2.80 "
Union Pacific Railroad (Broadway Station, Council Bluffs, Iowa, to South Omaha, Neb.)	8.73 "
Missouri Valley and Blair Railway and Bridge Company's track	3.36 "
Chicago, St. Paul, Minneapolis & Omaha Railway: Blair to Omaha, Neb.	24.70 "
Elroy to Wyeville, Wis.	22.79 "
In Sioux City, Iowa	2.28 "
Illinois Central Railroad (Sioux City to Wren, Iowa)	10.10 "

	76.78 "
Total miles of railroad operated December 31, 1916	8,107.82 "

FREIGHT TRAFFIC.

The details of Freight Traffic for the year ending December 31, 1916, compared with the preceding calendar year, were as follows:

	1915	1916	Increase— Amount	Per Cent.
FREIGHT REVENUE	\$54,514,228.77	\$65,380,164.97	\$10,865,936.20	19.93

	1915	1916	Percentage of Increase or Decrease
TONS OF REVENUE FREIGHT CARRIED	45,144,902	56,407,915	24.95 Inc.

TONS OF REVENUE FREIGHT CARRIED ONE MILE	6,546,494,019	8,130,953,190	24.20 Inc.
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AVERAGE REVENUE RECEIVED PER TON	\$1.21	\$1.16	4.13 Dec.
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AVERAGE REVENUE RECEIVED PER TON PER MILE83 of a cent	.80 of a cent	3.61 Dec.
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AVERAGE DISTANCE EACH REVENUE TON WAS HAULED	145.01 miles	144.15 miles	.59 Dec.
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MILEAGE OF FREIGHT AND MIXED TRAINS	17,174,318	19,187,796	11.72 Inc.
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AVERAGE NUMBER OF TONS OF REVENUE AND NON-REVENUE FREIGHT CARRIED PER TRAIN MILE:			
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East of Missouri River	506.43	557.79	10.14 Inc.
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West of Missouri River	208.48	217.27	4.22 Inc.
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Whole Road	467.00	510.14	9.24 Inc.
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AVERAGE NUMBER OF TONS OF REVENUE AND NON-REVENUE FREIGHT CARRIED PER LOADED CAR MILE	21.47	22.66	5.54 Inc.
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AVERAGE FREIGHT REVENUE PER TRAIN MILE	\$3.17	\$3.41	7.57 Inc.
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PASSENGER TRAFFIC

The details of Passenger Traffic for the year ending December 31, 1916, compared with the preceding calendar year, were as follows:

	1915	1916	Increase— Amount	Per Cent.
PASSENGER REVENUE	\$20,536,398.83	\$22,329,509.32	\$1,793,110.49	8.73

	1915	1916	Percentage of Increase
REVENUE PASSENGERS CARRIED	33,069,059	33,278,155	.63 Inc.

REVENUE PASSENGERS CARRIED ONE MILE	1,137,152,246	1,158,624,580	1.89 Inc.
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AVERAGE FARE PAID PER PASSENGER	62 cents	67 cents	8.06 Inc.
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AVERAGE RATE PAID PER PASSENGER PER MILE	1.81 cents	1.93 cents	6.63 Inc.
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AVERAGE DISTANCE TRAVELED PER REVENUE PASSENGER	34.39 miles	34.82 miles	1.25 Inc.
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MILEAGE OF PASSENGER AND MIXED TRAINS	21,248,128	21,893,812	3.04 Inc.
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AVERAGE PASSENGER-TRAIN REVENUE PER TRAIN MILE	\$1.23	\$1.31	6.50 Inc.
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MAINTENANCE OF WAY AND STRUCTURES

The total Operating Expenses of the Company for the year ending December 31, 1916, were \$65,120,827.01; of this amount \$11,831,004.23 was for charges pertaining to the Maintenance of Way and Structures. Included in these charges is a large part of the cost of 64,843 tons of steel rails, the greater portion of which was laid in replacement of rails of lighter weight in 477.01 miles of track; also the cost of 2,977,611 new ties.

The charges for Maintenance of Way and Structures also include a portion of the cost of ballasting 40.20 miles of track with crushed stone, 115.29 miles with gravel, and 93.16 miles with cinders; the erection, in place of wooden structures, of 7 new steel bridges on masonry, and 12 on pile supports, aggregating 594 feet in length and containing 226 tons of bridge metal; and the replacement of other wooden structures with masonry arch and box culverts and cast-iron pipes, the openings being filled with earth. The wooden structures replaced by permanent work aggregate 3,329 feet in length.

The charges on account of Maintenance of Way and Structures for the year ending December 31, 1916, compared with the preceding calendar year, were as follows:

	1915	1916	Increase— or Decrease
COST OF RAILS:			
New steel rails	\$919,727.82	\$854,431.09	\$65,296.73 Dec.
Usable and re-rolled rails	1,021,853.68	927,488.76	94,364.92 Dec.

	\$1,941,581.50	\$1,781,919.85	\$159,661.65 Dec.
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Less value of old rails and other items	1,608,097.58	1,576,260.54	31,837.04 Dec.
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Net charge for rails	\$333,483.92	\$205,659.31	\$127,824.61 Dec.
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COST OF TIES	1,668,179.07	1,744,629.55	76,450.48 Inc.
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COST OF BALLAST	95,189.61	134,009.68	38,820.07 Inc.
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COST OF OTHER TRACK MATERIAL	399,556.91	525,258.33	125,701.42 Inc.
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ROADWAY AND TRACK LABOR AND OTHER EXPENSES	4,343,438.72	5,356,253.30	1,012,814.58 Inc.
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Total Charges for Roadway and Track	\$6,839,848.23	\$7,965,810.17	\$1,125,961.94 Inc.
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Other Charges Account Maintenance of Way and Structures were as follows:

BRIDGES, TRESTLES AND CULVERTS	654,695.01	729,147.57	74,452.56 Inc.
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ROAD CROSSINGS, FENCES, ETC.	332,171.21	381,848.92	49,677.71 Inc.
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SIGNALS AND INTERLOCKING PLANTS	478,033.45	485,676.30	7,642.85 Inc.
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BUILDINGS, FIXTURES AND GROUNDS	920,822.20	1,114,793.51	193,971.31 Inc.
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DOCKS AND WHARVES	87,508.84	116,715.31	29,206.47 Inc.
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SUPERINTENDENCE	510,898.16	536,937.72	26,039.56 Inc.
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ROADWAY TOOLS AND SUPPLIES	141,360.27	198,936.92	57,576.65 Inc.
SUNDRY MISCELLANEOUS CHARGES	251,881.46	301,137.81	49,256.35 Inc.

Total Charges Account
Maintenance of Way and Structures \$10,217,218.83 \$11,831,004.23 \$1,613,785.40 Inc.

The above charges for Maintenance of Way and Structures for the current year amount to 18.17 per cent. of the total Operating Expenses, as compared with 17.91 per cent. for the preceding calendar year.

MAINTENANCE OF EQUIPMENT

The charges on account of Maintenance of Equipment for the year ending December 31, 1916, compared with the preceding calendar year, were as follows:

	1915	1916	Increase
LOCOMOTIVES	\$4,875,855.63	\$5,735,713.14	\$859,857.51 Inc.
PASSENGER-TRAIN CARS	1,342,775.16	1,542,036.03	199,260.87 Inc.
FREIGHT-TRAIN CARS	6,246,536.49	6,826,677.08	580,140.59 Inc.
WORK EQUIPMENT	148,864.84	234,162.42	85,297.58 Inc.
SHOP MACHINERY AND TOOLS	166,325.94	237,777.64	71,451.70 Inc.
SUPERINTENDENCE	51,845.93	381,369.02	19,523.09 Inc.
SUNDRY MISCELLANEOUS CHARGES	93,058.44	129,610.51	36,552.07 Inc.

Total Charges Account
Maintenance of Equipment \$13,235,262.43 \$15,087,345.84 \$1,852,083.41 Inc.

The above charges for Maintenance of Equipment for the current year amount to 23.17 per cent. of the total Operating Expenses, as compared with 23.19 per cent. for the preceding calendar year.

RESERVE FOR ACCRUED DEPRECIATION ON EQUIPMENT

At the close of the preceding fiscal year (June 30, 1916) there was a balance to the credit of the Equipment Reserve Accounts of \$10,240,390.04

During the six months ending December 31, 1916, there was credited to the Equipment Reserve Accounts on account of depreciation charges to Operating Expenses 1,299,325.06

And there was charged during the six months ending December 31, 1916, against the above amount the Accrued Depreciation on Equipment retired or transferred from one class of service to another 114,823.13

Leaving a balance to the credit of the Equipment Reserve Accounts on December 31, 1916, of \$11,424,891.97

TRANSPORTATION EXPENSES

The Transportation Expenses of the Company for the year ending December 31, 1916, were \$34,433,716.57, or 52.88 per cent. of the total Operating Expenses. Of this amount \$22,418,413.56, or 65.10 per cent., was charged for labor; \$6,813,421.05, or 19.79 per cent., was charged for fuel for locomotives; and \$5,201,881.96, or 15.11 per cent., was charged for supplies and miscellaneous items. The increase in the Transportation Expenses for the year ending December 31, 1916, as compared with the preceding calendar year, was \$4,387,709.14, or 14.60 per cent., distributed as follows:

Increase in amount charged for labor \$3,038,491.85

Increase in amount charged for fuel for locomotives 852,318.56

Increase in amount charged for supplies and miscellaneous items 496,898.73

..... \$4,387,709.14

CAPITAL STOCK

There has been no change since the close of the preceding fiscal year (June 30, 1916), in the Capital Stock and Scrip of the Company.

The Company's authorized Capital Stock is Two Hundred Million Dollars (\$200,000,000.00), of which the following has been issued to December 31, 1916:

OUTSTANDING:
Common Stock and Scrip \$130,117,028.82
Preferred Stock and Scrip 22,395,120.00
Special Stock 65,000.00

Total Stock and Scrip Outstanding \$152,577,148.82

OWNED BY THE COMPANY:
Common Stock and Scrip \$2,338,502.15
Preferred Stock and Scrip 3,834.56

Total Stock and Scrip owned by the Company 2,342,336.71

Total Capital Stock and Scrip, Dec. 31, 1916 \$154,919,485.53

FUNDED DEBT

At the close of the preceding fiscal year (June 30, 1916) the amount of Funded Debt, exclusive of Bonds in the Treasury, was \$214,635,000.00

The above amount has been decreased during the six months ending December 31, 1916, by Bonds and Equipment Trust Certificates redeemed, as follows:

W. & St. P. R. R. (Extension Western Division) First Mortgage, 7%, matured December 1, 1916, viz.:
Redeemed \$3,592,100.00
Unpresented and transferred to "Current Liabilities" 648,900.00

..... \$4,241,000.00

North Western Union Ry. First Mortgage, 7%, redeemed 201,500.00

M. L. S. & W. Ry. Extension and Improvement Sinking Fund Mortgage, 5%, redeemed 2,000.00

C. & N. W. Ry. Sinking Fund of 1879, 5%, redeemed 12,000.00

C. & N. W. Ry. Sinking Fund Debentures of 1933, 5%, redeemed 14,000.00

C. & N. W. Ry. Equipment Trust Certificates of 1912, 4½%, redeemed, viz.:

Series A \$300,000.00

Series B 300,000.00

Series C 400,000.00

..... 1,000,000.00

Total Funded Debt Redeemed 5,470,500.00

Leaving Funded Debt Outstanding December 31, 1916 \$209,164,500.00

BONDS IN THE TREASURY AND DUE FROM TRUSTEE

At the close of the preceding fiscal year (June 30, 1916) the amount of the Company's Bonds in the Treasury was \$3,618,000.00

The above amount has been increased during the six months ending December 31, 1916, as follows:

W. & St. P. R. R. (Extension Western Division) First Mortgage, 7%, redeemed \$3,592,100.00

North Western Union Ry. First Mortgage, 7%, redeemed 201,500.00

M. L. S. & W. Ry. Extension and Improvement Sinking Fund Mortgage, 5%, redeemed 2,000.00

C. & N. W. Ry. Sinking Fund of 1879, 5%, redeemed 12,000.00

C. & N. W. Ry. Sinking Fund Debentures of 1933, 5%, redeemed 14,000.00

C. & N. W. Ry. General Mortgage Gold Bonds of 1987, due from Trustee on Account of Construction Expenditures made during the year.. 1,000,000.00

..... 4,821,600.00

The Bonds on hand have been decreased during the six months as follows:

C. & N. W. Ry. Equipment Trust Certificates of 1913, 4½%, retired 400,000.00

Total, December 31, 1916 \$8,039,600.00

Net Increase during the six months \$4,421,600.00

In addition to the foregoing transactions, the following Treasury Bonds were exchanged for Trustee's Certificates entitling the Company to an equal amount of C. & N. W. Ry. General Mortgage Gold Bonds of 1987, viz.:

W. & St. P. R. R. (Extension Western Division) First Mortgage, 7% \$3,592,100.00

M. L. S. & W. Ry. Extension and Improvement Sinking Fund Mortgage, 5% 40,000.00

..... \$3,632,100.00

CONSTRUCTION

The construction charges for the six months ending December 31, 1916, were as follows:

ON ACCOUNT OF ADDITIONAL MAIN TRACKS, viz.: Miles
Second Track, Cedar Rapids to Beverly, Iowa 4.89 \$83,021.20

ON ACCOUNT OF ELEVATING TRACKS, viz.:
Greenfield Avenue north, Milwaukee, Wis. 168,768.28

SUNDRY CONSTRUCTION:

Land for Transportation Purposes \$40,143.77

Buildings and Fixtures 472,472.94

Bridges, Trestles and Culverts 400,935.32

New Sidings, Yard Tracks and Spurs to Industries 223,060.31

Crossings and Signs 91,159.29

Signals and Interlockers 36,705.77

Betterment of Roadway and Track 637,306.47

Shop Machinery 70,748.77

Ore Dock and Yard Tracks, Ashland, Wis. 208,063.03

Calumet Terminal Elevator, Chicago, Illinois. 1,356,020.68

Kinnickinnic Elevator, Milwaukee, Wis. 205,281.06

Miscellaneous Construction, including Fences, Wharves and Docks, and other items 183,578.29

..... 3,925,475.70

EQUIPMENT:

4 Work Equipment Cars \$27,061.59

Improvement of Equipment 145,438.81

..... \$172,500.40

Less Original Cost of Equipment Retired, as follows:

5 Locomotives \$42,540.86

614 Freight-train Cars 348,717.60

2 Passenger-train Cars 8,678.24

125 Work Equipment Cars 29,833.11

Other Items 25,214.87

..... 454,984.68

Cr. 282,484.28

..... \$3,894,780.90

LANDS

During the six months ending December 31, 1916, 3,076.20 acres and 15 town lots of the Company's Land Grant lands were sold for the total consideration of \$151,869.57. The number of acres remaining in the several Grants December 31, 1916, amounted to 310,652.41 acres, of which 8,405.68 acres were under contract for sale, leaving unsold 302,246.73 acres.

Appended hereto may be found statements, accounts, and statistics relating to the business of the year, and the condition of the Company's affairs on December 31, 1916.

By order of the Board of Directors, RICHARD H. AISHTON, President.

PROFIT AND LOSS—DECEMBER 31, 1916

Dr.

CHARGES FOR SIX MONTHS ENDING DECEMBER 31, 1916:

Depreciation accrued prior to July 1, 1907, on equipment retired or changed from one class to another \$ 162,105.03

Net loss on property sold or abandoned and not replaced.. 66,384.23

Miscellaneous Debits 278,171.37

Balance Credit, December 31, 1916, carried to Balance Sheet 47,941,322.86

..... \$48,447,983.49

Cr.

Balance, June 30, 1916 \$41,107,806.84

CREDITS FOR SIX MONTHS ENDING DECEMBER 31, 1916:

Balance Income brought forward from Income Account (page 40) 7,156,673.54

Donations 56,683.11

Miscellaneous Credits 216,820.00

..... \$48,447,983.49

CHICAGO, SAINT PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY

REPORT OF THE BOARD OF DIRECTORS

To the Stockholders of the Chicago, Saint Paul, Minneapolis and Omaha Railway Company:

The Board of Directors submit herewith their report of the operations and affairs of the Chicago, Saint Paul, Minneapolis and Omaha Railway Company for the year ending December 31, 1916.

Average number of miles operated, 1,752.81.

OPERATING REVENUES:

Freight	\$13,837,306.31
Passenger	5,414,951.90
Other Transportation	1,246,769.81
Incidental	356,258.39

Total Operating Revenues	\$20,855,286.41
OPERATING EXPENSES (65.25 per cent. of Operating Revenues)	13,608,879.45

Net Revenue from Railway Operations	\$ 7,246,406.96
RAILWAY TAX ACCRUALS (5.05 per cent. of Operating Revenues)	\$1,053,392.81
UNCOLLECTIBLE RAILWAY REVENUES	7,033.27
	1,060,426.08

Railway Operating Income	\$ 6,185,980.88
NONOPERATING INCOME:	
Rental Income	\$358,860.79
Dividend Income	46,351.00
Income from Funded Securities	15,187.28
Income from Unfunded Securities and Accounts, and other items	57,670.61
Total Nonoperating Income	478,069.68

Gross Income	\$ 6,664,050.56
DEDUCTIONS FROM GROSS INCOME:	
Rental Payments	\$ 667,173.95
Interest on Funded Debt	2,259,664.83
Other Deductions	22,236.40
Total Deductions from Gross Income	2,949,075.18

Net Income	\$ 3,714,975.38
DISPOSITION OF NET INCOME:	
Dividends:	
7% on Preferred Stock	\$ 788,235.00
7% on Common Stock	1,298,986.50
	2,087,221.50
Balance Income for the year	\$ 1,627,753.88

The results as compared with the preceding calendar year were as follows:	
Freight Revenue increased	\$1,960,115.93
Passenger Revenue increased	472,477.71
Other Transportation Revenue increased	182,596.24
Incidental Revenue increased	39,482.05
Total Operating Revenues increased	\$ 2,654,671.93
Operating Expenses increased	\$1,352,501.01
Railway Tax Accruals increased	58,924.82
Uncollectible Railway Revenues increased	1,216.04
	1,412,641.87
Railway Operating Income increased	\$ 1,242,030.06

FREIGHT TRAFFIC

The details of Freight Traffic for the year ending Dec. 31, 1916, compared with the preceding calendar year, were as follows:

	1915	1916	Amount	Per Cent.
FREIGHT REVENUE	\$11,877,190.38	\$13,837,306.31	\$1,960,115.93	16.50
			Percentage of Increase or Decrease	
TONS OF REVENUE FREIGHT CARRIED	9,187,746	10,699,463	16.45 Inc.	
TONS OF FREIGHT CARRIED ONE MILE	1,411,032,382	1,714,280,167	21.49 Inc.	
AVERAGE REVENUE RECEIVED PER TON	\$1.29	\$1.29		
AVERAGE REVENUE RECEIVED PER TON PER MILE .....	.84 of a cent	.81 of a cent	3.57 Dec.	
AVERAGE DISTANCE EACH REVENUE TON WAS HAULED	153.58 miles	160.22 miles	4.32 Inc.	
MILEAGE OF FREIGHT AND MIXED TRAINS	4,141,125	4,532,892	9.46 Inc.	
AVERAGE NUMBER OF TONS OF ALL FREIGHT CARRIED PER TRAIN MILE	372.93	414.05	11.03 Inc.	
AVERAGE NUMBER OF TONS OF ALL FREIGHT CARRIED PER LOADED CAR MILE	20.74	21.95	5.83 Inc.	
AVERAGE FREIGHT REVENUE PER TRAIN MILE	\$2.87	\$3.05	6.27 Inc.	

PASSENGER TRAFFIC

The details of Passenger Traffic for the year ending Dec. 31, 1916, compared with the preceding calendar year, were as follows:

	1915	1916	Amount	Per Cent.
PASSENGER REVENUE	\$4,942,474.19	\$5,414,951.90	\$472,477.71	9.56
			Percentage of Increase or Decrease	
PASSENGERS CARRIED	5,085,007	5,249,303	3.23 Inc.	
PASSENGERS CARRIED ONE MILE	250,438,225	253,521,438	1.23 Inc.	
AVERAGE FARE PAID PER PASSENGER	97.20 cents	103.16 cents	6.13 Inc.	
AVERAGE RATE PAID PER PASSENGER PER MILE	1.974 cents	2.136 cents	8.21 Inc.	
AVERAGE DISTANCE TRAVELED PER PASSENGER	49.25 miles	48.30 miles	1.93 Dec.	
MILEAGE OF REVENUE PASSENGER AND MIXED TRAINS	4,318,165	4,398,576	1.86 Inc.	
AVERAGE PASSENGER TRAIN REVENUE PER TRAIN MILE	\$1.35	\$1.47	8.89 Inc.	

MAINTENANCE OF WAY AND STRUCTURES

The total Operating Expenses of the Company for the year ending December 31, 1916, were \$13,608,879.45; of this amount \$2,360,322.66 was for charges pertaining to Maintenance of Way and Structures. Included in these charges are \$93,775.32 for steel rails, \$321,828.06 for ties, and the cost of re-ballasting 95.7 miles with gravel and cinders, also part cost of replacing 2,614 feet of wooden bridging with permanent work.

During the year 7,606 tons of new steel rails and 5,266 tons of usable and re-rolled steel rails were laid in track, a greater portion of which replaced rails of lighter weight; 578,718 ties of all descriptions were laid in renewals.

The charges on account of Maintenance of Way and Structures for the year ending December 31, 1916, compared with the preceding calendar year, were as follows:

	1915	1916	Increase or Decrease
COST OF RAILS:			
New steel rails	\$169,438.57	\$241,494.36	\$72,055.79 Inc.
Usable and re-rolled rails	196,331.95	127,481.10	68,850.85 Dec.
	\$365,770.52	\$368,975.46	\$ 3,204.94 Inc.
Less value of old rails and other items	257,179.68	275,200.14	18,020.46 Inc.
Net charge for rails	\$108,590.84	\$ 93,775.32	\$14,815.52 Dec.
COST OF TIES	306,544.01	321,828.06	15,284.05 Inc.
COST OF BALLAST	22,758.51	17,147.70	5,610.81 Dec.
COST OF OTHER TRACK MATERIAL	106,783.62	106,956.78	173.16 Inc.
ROADWAY AND TRACK LABOR AND OTHER EXPENSES	771,268.61	882,459.59	111,190.98 Inc.
Total Charges for Roadway and Track	\$1,315,945.59	\$1,422,167.45	\$106,221.86 Inc.
Other Charges Account Maintenance of Way and Structures were as follows:			
BRIDGES, TRESTLES AND CULVERTS	308,779.84	316,282.46	7,502.62 Inc.
ROAD CROSSINGS, FENCES, ETC.	67,014.95	75,623.71	8,608.76 Inc.
SIGNALS AND INTERLOCKING PLANTS	25,676.90	23,874.09	1,802.81 Dec.
BUILDINGS, FIXTURES AND GROUNDS	202,069.72	288,118.92	86,049.20 Inc.
DOCKS AND WHARVES	1,347.67	1,301.21	46.46 Dec.
SUPERINTENDENCE	105,967.33	113,727.36	7,760.03 Inc.
ROADWAY TOOLS AND SUPPLIES	27,764.27	35,468.32	7,704.05 Inc.
SUNDRY MISCELLANEOUS CHARGES	56,532.37	83,759.14	27,226.77 Inc.
Total Charges Account Maintenance of Way and Structures	\$2,111,098.64	\$2,360,322.66	\$249,224.02 Inc.

The above charges for Maintenance of Way and Structures for the current year amount to 17.34 per cent of the total Operating Expenses, as compared with 17.22 per cent for the preceding calendar year.

MAINTENANCE OF EQUIPMENT

The charges on account of Maintenance of Equipment for the year ending December 31, 1916, compared with the preceding calendar year, were as follows:

	1915	1916	Increase or Decrease
LOCOMOTIVES	\$961,056.49	\$1,106,117.44	\$145,060.95 Inc.
PASSENGER-TRAIN CARS	253,824.53	255,057.15	1,232.62 Inc.
FREIGHT-TRAIN CARS	1,054,713.45	965,307.64	89,405.81 Dec.
WORK EQUIPMENT	45,216.63	49,248.45	4,031.82 Inc.
SHOP MACHINERY AND TOOLS	28,588.01	36,281.68	7,693.67 Inc.
SUPERINTENDENCE	65,038.39	72,988.68	7,950.29 Inc.
SUNDRY MISCELLANEOUS CHARGES	42,982.88	49,792.72	6,809.84 Inc.
Total Charges Account Maintenance of Equipment	\$2,451,420.38	\$2,534,793.76	\$ 83,373.38 Inc.

The above charges for Maintenance of Equipment for the current year amount to 18.63 per cent of the total Operating Expenses, as compared with 20.00 per cent for the preceding calendar year.

RESERVE FOR ACCRUED DEPRECIATION ON EQUIPMENT

At the close of the preceding fiscal year (June 30, 1916) there was a balance to the credit of the Equipment Reserve Accounts of

During the six months ending December 31, 1916, there was credited to the Equipment Reserve Accounts on account of charges to Operating Expenses for Accrued Depreciation

And there was charged during the six months ending December 31, 1916, against the above amount the Accrued Depreciation previously credited this account on Equipment retired or transferred from one class of service to another

Leaving a balance to the credit of the Equipment Reserve Accounts on December 31, 1916, of

TRANSPORTATION EXPENSES

The Transportation Expenses of the Company for the year were \$7,680,386.93, or 56.44 per cent. of the total Operating Expenses. Of this amount \$4,215,956.90, or 54.89 per cent., was for labor; \$2,357,880.25, or 30.70 per cent., was for fuel for locomotives; and \$1,106,549.78, or 14.41 per cent., was for supplies and miscellaneous items.

The total increase in the charges as compared with the preceding calendar year was \$945,319.26, distributed as follows:

Increase in amount charged for labor	\$495,484.10
Increase in amount charged for fuel for locomotives	385,025.19
Increase in amount charged for supplies and miscellaneous items	64,809.97
	\$945,319.26

By order of the Board of Directors.

JAMES T. CLARK,
President.

Proclamation

By the President to the People

The White House, April 15, 1917.

My Fellow-Countrymen:

THE entrance of our own beloved country into the grim and terrible war for democracy and human rights which has shaken the world creates so many problems of national life and action which call for immediate consideration and settlement that I hope you will permit me to address to you a few words of earnest counsel and appeal with regard to them.

We are rapidly putting our navy upon an effective war footing and are about to create and equip a great army, but these are the simplest parts of the great task to which we have addressed ourselves. There is not a single selfish element, so far as I can see, in the cause we are fighting for. We are fighting for what we believe and wish to be the rights of mankind and for the future peace and security of the world. To do this great thing worthily and successfully we must devote ourselves to the service without regard to profit or material advantage and with an energy and intelligence that will rise to the level of the enterprise itself. We must realize to the full how great the task is and how many things, how many kinds and elements of capacity and service and self-sacrifice it involves.

These, then, are the things we must do, and do well, besides fighting—the things without which mere fighting would be fruitless:

We must supply abundant food for ourselves and for our armies and our seamen, not only, but also for a large part of the nations with whom we have now made common cause, in whose support and by whose sides we shall be fighting.

We must supply ships by the hundreds out of our shipyards to carry to the other side of the sea, submarines or no submarines, what will every day be needed there, and abundant materials out of our fields and our mines and our factories with which not only to clothe and equip our own forces on land and sea, but also to clothe and support our people, for whom the gallant fellows under arms can no longer work; to help clothe and equip the armies with which we are co-operating in Europe, and to keep the looms and manufactories there in raw material; coal to keep the fires going in ships at sea

and in the furnaces of hundreds of factories across the sea; steel out of which to make arms and ammunition both here and there; rails for wornout railways back of the fighting fronts; locomotives and rolling stock to take the place of those every day going to pieces; mules, horses, cattle for labor and for military service; everything with which the people of England and France and Italy and Russia have usually supplied themselves, but cannot now afford the men, the materials, or the machinery to make.

It is evident to every thinking man that our industries, on the farms, in the shipyards, in the mines, in the factories, must be made more prolific and more efficient than ever, and that they must be more economically managed and better adapted to the particular requirements of our task than they have been; and what I want to say is that the men and the women who devote their thought and their energy to these things will be serving the country and conducting the fight for peace and freedom just as truly and just as effectively as the men on the battlefield or in the trenches. The industrial forces of the country, men and women alike, will be a great national, a great international service army—a notable and honored host engaged in the service of the nation and the world, the efficient friends and saviors of free men everywhere. Thousands, nay, hundreds of thousands, of men otherwise liable to military service will of right and of necessity be excused from that service and assigned to the fundamental sustaining work of the fields and factories and mines, and they will be as much part of the great patriotic forces of the nation as the men under fire.

I take the liberty, therefore, of addressing this word to the farmers of the country and to all who work on the farms: The supreme need of our own nation, and of the nations with which we are co-operating is an abundance of supplies, and especially of foodstuffs. The importance of an adequate food supply, especially for the present year, is superlative. Without abundant food alike for the armies and the peoples now at war, the whole great enterprise upon which we have embarked will

break down and fail. The world's food reserves are low. Not only during the present emergency, but for some time after peace shall have come, both our own people and a large proportion of the people of Europe must rely upon the harvests in America.

Upon the farmers of this country, therefore, in large measure rests the fate of the war and the fate of the nations. May the nation not count upon them to omit no step that will increase the production of their land or that will bring about the most effectual co-operation in the sale and distribution of their products? The time is short. It is of the most imperative importance that everything possible be done, and done immediately, to make sure of large harvests. I call upon young men and old alike and upon the able-bodied boys of the land to accept and act upon this duty—to turn in hosts to the farms and make certain that no pains and no labor is lacking in this great matter.

I particularly appeal to the farmers of the South to plant abundant foodstuffs, as well as cotton. They can show their patriotism in no better or more convincing way than by resisting the great temptation of the present price of cotton and helping, helping upon a great scale, to feed the nation and the peoples everywhere who are fighting for their liberties and for our own. The variety of their crops will be the visible measure of their comprehension of their national duty.

The government of the United States and the governments of the several States stand ready to co-operate. They will do everything possible to assist farmers in securing an adequate supply of seed, an adequate force of laborers when they are most needed, at harvest time, and the means of expediting shipments of fertilizers and farm machinery, as well as of the crops themselves when harvested. The course of trade shall be as unhampered as it is possible to make it, and there shall be no unwarranted manipulation of the nation's food supply by those who handle it on its way to the consumer. This is our opportunity to demonstrate the efficiency of a great democracy, and we shall not fall short of it!

This let me say to the middlemen of every sort, whether they are handling our foodstuffs or our raw materials of manufacture or the products of our mills and factories: The eyes of the country will be especially upon you. This is your opportunity for signal service, efficient and disinterested. The country expects you, as it expects all others, to forego unusual profits, to organize and expedite shipments of supplies of every kind, but especially of food, with an eye to the service you are rendering and in the spirit of those who enlist in the

ranks, for their people, not for themselves. I shall confidently expect you to deserve and win the confidence of people of every sort and station.

To the men who run the railways of the country, whether they be managers or operative employees, let me say that the railways are the arteries of the nation's life and that upon them rests the immense responsibility of seeing to it that those arteries suffer no obstruction of any kind, no inefficiency or slackened power. To the merchant let me suggest the motto, "Small profits and quick service," and to the shipbuilder the thought that the life of the war depends upon him. The food and the war supplies must be carried across the seas, no matter how many ships are sent to the bottom. The places of those that go down must be supplied, and supplied at once. To the miner let me say that he stands where the farmer does: the work of the world waits on him. If he slackens or fails, armies and statesmen are helpless. He also is enlisted in the great Service Army. The manufacturer does not need to be told, I hope, that the nation looks to him to speed and perfect every process; and I want only to remind his employees that their service is absolutely indispensable and is counted on by every man who loves the country and its liberties.

Let me suggest, also, that every one who creates or cultivates a garden, helps, and helps greatly, to solve the problem of the feeding of the nations; and that every housewife who practices strict economy puts herself in the ranks of those who serve the nation. This is the time for America to correct her unpardonable fault of wastefulness and extravagance. Let every man and every woman assume the duty of careful, provident use and expenditure as a public duty, as a dictate of patriotism, which no one can now expect ever to be excused or forgiven for ignoring.

In the hope that this statement of the needs of the nation and of the world in this hour of supreme crisis may stimulate those to whom it comes and remind all who need reminder of the solemn duties of a time such as the world has never seen before, I beg that all editors and publishers everywhere will give as prominent publication and as wide circulation as possible to this appeal. I venture to suggest, also, to all advertising agencies that they would perhaps render a very substantial and timely service to the country if they would give it widespread repetition. And I hope that clergymen will not think the theme of it an unworthy or inappropriate subject of comment and homily from their pulpits.

The supreme test of the nation has come. We must all speak, act, and serve together!

WOODROW WILSON.